



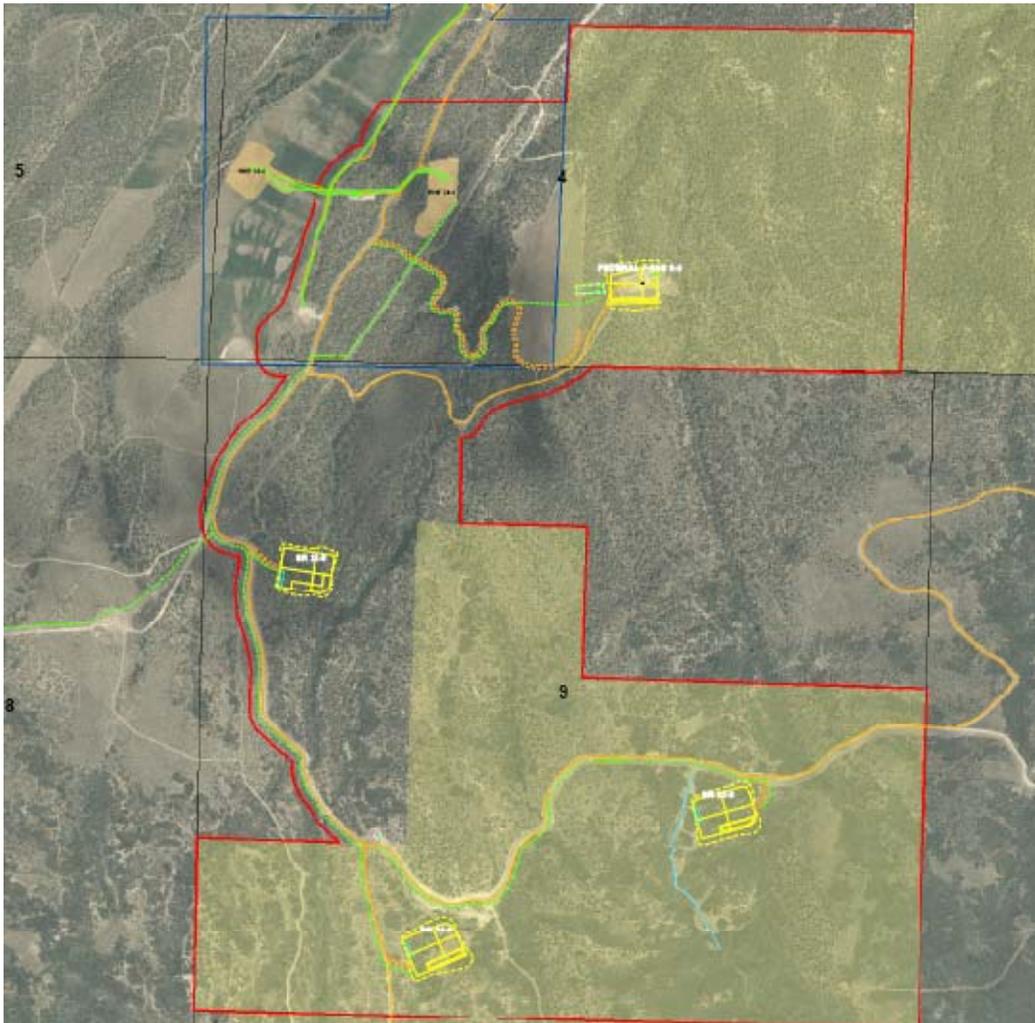
**U. S. Department of the Interior**  
Bureau of Land Management  
Colorado State Office

Glenwood Springs Energy Office

August 2008



**Spruce Creek Master Development Plan  
for Oil and Gas Exploration and Development  
EA# CO-140-2007-167**



USDI Bureau of Land Management  
Glenwood Springs Energy Office  
2425 South Grand Avenue, Suite 101  
Glenwood Springs, Colorado 81601



**FONSI**  
**CO140-2007-167EA**

The following 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 Spruce Creek Master Development Plan submitted by Williams Production RMT Company for oil and gas development in Garfield County, Colorado, with the lease stipulations and conditions of approval attached thereto. 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.

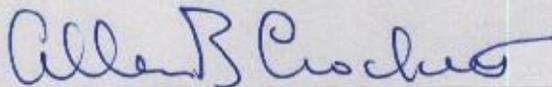
RATIONALE: The bases for this decision are as follows:

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 would be mitigated with measures included in the proposed action or attached as conditions of approval.

MITIGATION MEASURES: Mitigation measures presented in Appendices A and B shall be incorporated as conditions of approval for both surface and drilling operations.

NAME OF PREPARER: Bridget Kobe Clayton, Natural Resource Specialist

SIGNATURE OF AUTHORIZED OFFICIAL:



Supervisory Natural Resource Specialist

DATE SIGNED: August 6, 2008



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**SPRUCE CREEK MASTER DEVELOPMENT PLAN**  
**Environmental Assessment #CO140-2007-167**  
**BLM Glenwood Springs Energy Office, August 2008**

**EXECUTIVE SUMMARY**

Williams Production RMT Company (Williams) proposes to develop oil and gas resources in an area of approximately 1,293 acres of Federal, private, and split-estate lands located in the Piceance Basin about 6 miles southwest of Rifle and 9 miles east of Parachute in Garfield County, Colorado. The proposed development plan, referred to as the Spruce Creek Master Development Plan (SCMDP), 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 Environmental Policy Act (NEPA). The SCMDP was prepared based on information provided by Williams and its consultants and on independent review and analysis by a BLM Interdisciplinary (ID) Team.

The proposed action put forth by Williams and described in the SCMDP consists of drilling up to 58 new wells from three new and one existing well pad (three on Federal surface and one on private surface). The bottomhole locations of the 58 wells would include 45 completed in Federal mineral estate and 13 in private mineral estate. The drilling rate is expected to result in eight wells to be completed in 2008, with the remainder to be completed from 2009 to 2012.

The proposed action would be structured so that well pads could undergo two phases of activity: 1) an exploration phase using a conventional drilling rig, and 2) a development phase using an efficiency drilling rig. Phasing would be conducted such that exploration activities on some well pads would occur concurrently with development activities on other pads.

Total surface disturbance from construction of well pads and centralized facilities would total approximately 30.9 (including staging areas), reflecting pad sizes ranging from 3 to 4.5 acres. Following drilling and completion, interim reclamation would reduce the long-term surface disturbance on the four pads to approximately 8 acres, which would extend through the anticipated 35-year life of the wells.

Other ground-disturbing activities described in the SCMDP would include approximately 4,200 linear feet of new access road and 9,163 linear feet of new pipelines. The access roads would result in approximately 2.39 acres of new disturbance; the pipeline would be collocated with the road and would not result in additional long-term disturbance. Most of pipelines would be installed within an existing 50-foot right-of-way. New finished road surface would average 25 feet wide. Long-term surface disturbance along the finished road surfaces and adjacent drainage ditches would be 2.39 acres or less.

Permanent surface facilities needed to support oil and gas development would include the wellheads, separation and dehydration units, and above-ground tanks for storage of condensate and produced water. Each pad would also have a reserve pit or a cuttings trench, depending on the type of drill rig used, for the disposal of drill cuttings and miscellaneous drilling debris. After completion of the wells at a pad, the reserve pit or cuttings trench would have hydrocarbons and debris removed and then be dried, backfilled, covered, and reclaimed. Produced water would be transported by truck or buried pipeline to a water treatment facility owned and operated by Williams or an approved commercial disposal facility.

Following completion activities at a pad, areas not needed during production would be revegetated using reclamation methods, standards, and species prescribed 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.

## **INTRODUCTION**

Williams Production RMT Company (Williams), a natural gas production company, is proposing a 4-year program of natural gas exploration and development on approximately 1,293 acres of public, split-estate, and private lands located in the Piceance Basin about 6 miles southwest of Rifle and 9 miles east of Parachute, Garfield County, Colorado (Figure 1). This proposal, referred to as the Spruce Creek Master Development Plan (SCMDP), includes portions of Sections 4 and 9, Township 7 South (T7S), Range 94 West (R94W), Sixth Principal Meridian.

The proposal consists of constructing, drilling, completing, and operating up to 58 new wells from one existing and three new surface locations. Ancillary facilities connected to the project that would be constructed or upgraded include access roads, gathering pipelines, and a variety of surface production equipment locations.

## **PURPOSE AND NEED**

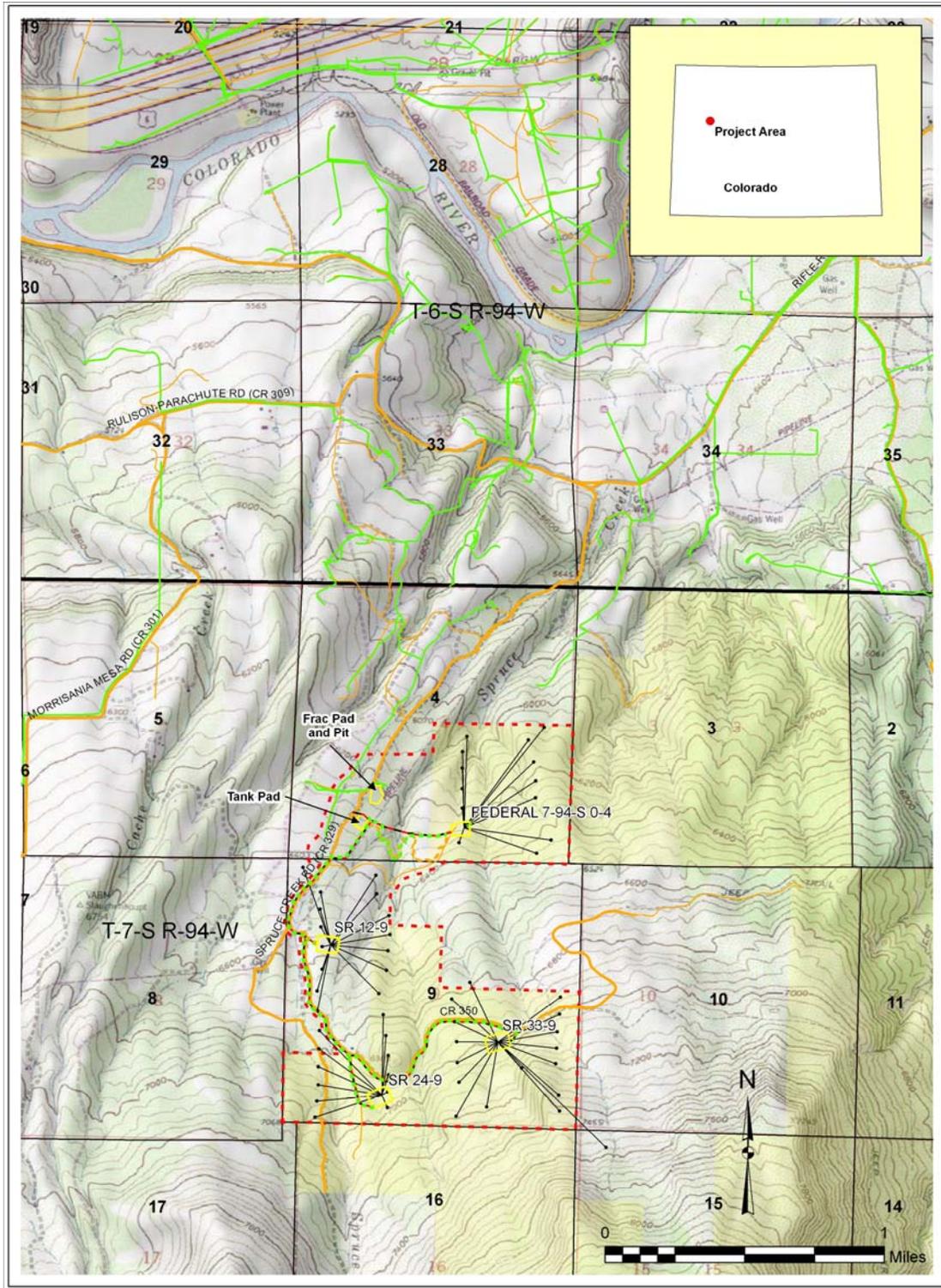
Exploration and development of Federal oil and gas leases by private industry is an integral part of the BLM's oil and gas leasing program under authority of the Mineral Leasing Act of 1920 as amended; the Mining and Minerals Policy Act of 1970; the Federal Land Policy and Management Act of 1976; the National Materials and Minerals Policy, Research, and Development Act of 1980; and the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

The purpose of the action is to develop natural gas resources on Federal leases COC046030, COC056040, COC063721, and COC006935 consistent with existing Federal lease rights. Lease holders retain rights to drill for, extract, remove, and market gas products. National mineral leasing policies and the regulations by which they are enforced recognize the statutory right of lease holders to develop federal mineral resources to meet continuing national needs and economic demands so long as undue and unnecessary environmental degradation does not occur. Also included is the right of the lease holder to build and maintain necessary improvements, subject to renewal or extension of the lease or leases in accordance with the appropriate authority. The proposed project would allow the lease holder, Williams, to determine through natural gas exploration if and where, additional development and production is feasible.

The purpose and need for action would have been met by structuring the development of the leases as a series of individual proposals. However, the current Glenwood Springs Resource Area Resource Management Plan<sup>1</sup> (RMP)(BLM 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.

## **PROPOSED ACTION**

The SCMDP is intended to describe a future development strategy given current market conditions and company constraints. If fully implemented, this proposal would result in up to 58 downhole locations drilled over the course of 4 years (2008 through 2012) at four surface locations, including one existing and three new well pads (Figure 1 and Table 1). The total number of wells drilled would depend largely on factors out of Williams' control, such as geologic success, engineering technology, economic factors, availability of commodity markets, and lease notices. Implementation of the full proposed drilling schedule is anticipated to take 4 years; however, potential timing limitations, rig availability, and natural gas prices (economics) may extend this timeline.



Legend

- County Road
- Other Existing Road
- Existing Pipeline
- - - Proposed Pipeline (buried - gas, water, condensate)
- - - Proposed Frac Line
- - - Proposed Road
- - - Proposed Production Equipment Area
- Proposed Pad or Pit
- Downholes
- BLM
- EA Boundary

August 6, 2008

Figure 1  
 Spruce Creek  
 Master Development Plan  
 EA Proposed Action  
 Williams Production

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Full development of the proposed action does not preclude additional future developments on these Federal leases. It might reasonably be anticipated that additional developments could occur in the future—either within the SCMDP or in offsite areas accessed by directional drilling techniques from pads in the SCMDP—due to alterations in downhole spacing orders or changes in environmental, economic, or technological conditions.

The proposed action would be structured as phased development in which each well pad would undergo one or both of two distinct phases: 1) an exploration phase and a development phase. The primary objective of the proposed exploratory drilling is to evaluate the following aspects of gas development in the SCMDP area:

- Potential productivity of the lease area
- Economics of drilling and completion techniques
- Feasibility of developing, capturing, producing, and transporting natural gas
- Depths or pressure windows that may be preferred as the target for economic gas production

Conventional rigs (designed to drill one to eight wells per well pad) would be used for the exploration phase of the proposed project. Conventional drilling rigs are better suited for exploratory work compared to efficiency drilling rigs because conventional drilling rigs require less space for the drilling operations and are easier to move.

The development phase would utilize efficiency drilling rigs, which incorporates off-shore drilling methods. This technology allows drilling of multiple wells (up to 22) from a single location and allows for simultaneous drilling, completion, and production operations for all wells at a well pad location, thus significantly reducing the timeframe to develop all wells at the well pad location. This is referred to as simultaneous operations (SIMOPS). In general, clustered development using efficiency rigs would be used for the development phase of the proposed project because this approach:

- Reduces the need for additional well pads, roads, and traffic.
- Eliminates the need to reclaim and later redisturb pads because all wells can be drilled with one rig visit.
- Allows an area to be “drilled out” in less time with no need to drill the same number of wells over a several-year period in the same area.
- Allows centralized production facilities for collection of produced water and condensate.

Phasing would be conducted such that activities associated with the exploration phase could be occurring at some pads concurrently with activities associated with the development phase at other pads.

A Regional Development Plan (RDP) would be submitted for each well pad when the application for a permit to drill (APD) is submitted. The RDP would provide detailed information for the proposed construction, drilling, completions, and operations, and steps taken during planning to minimize impacts to environmental or natural resources.

The life of the project in its entirety could extend up to 35 years because the reasonable productive life of a gas well completed in the Wasatch and Mesaverde Formations is estimated to be 30 to 35 years.

The proposed action was designed after several early coordination meetings between Williams and BLM, during which various resource concerns were identified and addressed. For example, one pad location was chosen to avoid a sensitive plant population, and another was reduced in size to avoid a riparian area.

Figure 1 and Table 1 present the locations of the proposed drilling activities and the property ownership in those areas. The area identified in the SCMDP encompasses the areas within which surface and subsurface activities are proposed on Federal property and the areas within which surface activities are proposed on private (fee) property. The SCMDP includes Federal and Fee surface in portions of section 4 and section 9, T7S, R94W.

**Table 1. Proposed Action Well Pads and Wells**

Well Pad	Well Pad Surface Location (Lease)*	Well Pad Surface Location (Legal)**	Proposed Number of Wells	Downhole Location (Legal)**	Downhole Location (Federal Lease)
Federal 7-94-S	Federal COC046030	SWSE Sec. 4	14	SE ¼ Sec. 4	Federal COC046030
SR 12-9	On private land	SWNW Sec. 9	15 (4 Fed; 11 private)	W½ Sec. 9	Federal COC006935
SR 24-9	Federal COC006935	SESW Sec. 9	12 (11 Fed; 1 private)	SW¼ Sec. 9	Federal COC006935, Federal COC056040
SR 33-9	Federal COC006935	NWSE Sec. 9	17 (16 Fed; 1 private)	SE¼ Sec. 9 NW¼ Sec. 15	Federal COC006935, Federal COC063721

\*All Federal surface in the SCMDP is managed by BLM.

\*\*All of the SCMDP area is within T7S, R94W.

The proposed action includes the following components, as illustrated in Figure 1:

- New well pads and expansion of an existing well pad
- New access roads and upgrades to existing roads
- New pipelines and upgrades to existing pipelines
- Staging areas for use in construction of pipelines and associated facilities
- Remote fracturing from one central frac pad
- Centralized production facilities – collecting water and fluids to a central tank battery (Figure 1)

Table 2 presents the overall plan for well development in the SCMDP, identifying the specific temporal and spatial employment of the exploration phase and the development phase. This table presents the proposed drilling schedule for each well pad, as projected for the years 2008 and 2009.

**Table 2. Projected Drilling Schedule for the Phased Development Process**

Well Pad	Section	2008	2009	2010	2011	2012
Federal 7-94-S	4	2	7	5		
SR 12-9	9	2	7	6		
SR 24-9	9	2			7	3
SR 33-9	9	2			8	7
<b>Number of Wells Drilled per Year</b>		8	14	11	15	10

Table 3 presents a summary of the estimated surface disturbances that would result from implementation of the proposed action. For each project component, the table presents:

- The total size of the working area, which is comprehensive in that it includes new long-term disturbance, new short-term disturbance, and further disturbance to areas of existing disturbance. Figure 1 depicts the working areas of the project components.
- The long-term disturbance associated with the footprint, which could extend up to 35 years.
- The short-term disturbance that would be reclaimed after completion activities, within 1 to 2 years.

### **Construction, Maintenance, and Use of Access Roads**

The SCMDP area is accessible from Rulison, Colorado, by traveling approximately 3-4 miles east on Garfield County Roads 309 and 320, then approximately 1-2 miles south on Spruce Creek Road (Figure 1). The road system in the SCMDP area under the proposed action is presented in Figure 1 and Table 3. To the extent feasible, existing roads would be used to access the proposed well pad facilities. Williams proposes to construct approximately 4,159 feet of new road to access the proposed well pad facilities. Existing roads proposed in the SCMDP area currently accommodate drilling traffic so would not require upgrading or expansion.

Road construction would occur in a 50-foot-wide easement. The access roads would have a 25-foot running width, including cuts and fills. Switchbacks and turnouts would be wider. All roads would be surfaced with gravel for the duration of production operations. Long-term land conversion would amount to 2.4 acres from the construction of new roads. Short-term disturbance (1 to 2 years) during road construction would be a maximum of 4.8 acres (Table 3).

The timing of road work would be dependent upon the drilling schedule (Table 2); roads would be constructed as needed to access well pads for drilling. For the SCMDP as a whole, all road construction would occur during the first year of exploration. For well pads where both exploration and development are proposed, the road system used during the exploration phase would also be adequate for the development phase; no additional road work would be required when moving from the exploration phase to the development phase to access a given well pad.

Maintenance of the roads used to access well locations would continue until final abandonment and reclamation of the well locations, at which point the roads would also be reclaimed. A regular road maintenance program would include, but is not limited to blading, ditching, culvert installation and cleanout, weed control, and gravel surfacing where excessive rutting or erosion may occur. Roads would be maintained in a safe and usable condition. Access roads would be reclaimed in accordance with BLM reclamation requirements, included as a condition of approval (Appendix A, Number 7).

Estimated traffic requirements for drilling and completion operations are shown in Table 4 for the exploration phase (8 wells) and in Table 5 for the development phase (54 wells). The “Trip Type” column lists the various service and supply vehicles that would travel to and from the well sites and production facilities. The “Round-Trip Frequency” column lists the number of trips. The figures provided in these tables are estimates. The level of drilling and production activity may vary over time in response to weather and other factors.

**Table 3. Summary of Estimated Surface Disturbance**

Project Component	Phase	Design and Construction Features	Drilling Features	Completion Features	Production Features	Working Area (acres)*	Long-Term Footprint (acres)**	Short-Term / Interim Reclaim (acres)***
<b>Roads</b>								
New roads and turnouts	Exploration and Development	25-foot average running surface	N/A	N/A	N/A	4.77	2.38	2.39
<b>Pads</b>								
Existing well pad expansions (Federal 7-94-S)	Exploration and Development	Current size: ~2 acres for wellheads, separators, cuttings trench	10,000 gallons water per well	5-7 fracture stimulation stages/well, 170,000 gallons water/fracture stimulation stage; Exploration: mobile service rig, pump trucks, sand trucks, frac tanks, mobile wireline trucks; Development: SIMOPS, Flowback Units, mobile service rig, pump trucks, sand trucks, frac tanks, mobile wireline trucks	Exploration: 1 separator per well, 1+ condensate tank/mineral interest, 2+ water tanks per pad; Development: 1 separator per well. Condensate and water to be piped to central production facility	3	2	1
New well pads (SR 12-9, SR 24-9, SR 33-9)	Exploration and Development	Wellheads, separators, reserve pit for exploration, cuttings trench for development	10,000 gallons water per well	5-7 fracture stimulation stages/well, 170,000 gallons water/fracture stimulation stage; Exploration: mobile service rig, pump trucks, sand trucks, frac tanks, mobile wireline trucks; Development: SIMOPS, Flowback Units, mobile service rig, pump trucks, sand trucks, frac tanks, mobile wireline trucks	Exploration: 1 separator per well, 1+ condensate tank/mineral interest, 2+ water tanks per pad; Development: 1 separator per well. Condensate and water to be piped to central production facility. One condensate tank will remain on the SR 33-9 pad.	13.53	6	7.53
New remote tank pad	Exploration and Development	Tankage for condensate and water	N/A	N/A	Condensate tanks and water tanks sufficient to handle volume produced (estimated 8 condensate tanks and 8 water tanks)	5.5	5.5	0

Project Component	Phase	Design and Construction Features	Drilling Features	Completion Features	Production Features	Working Area (acres)*	Long-Term Footprint (acres)**	Short-Term / Interim Reclaim (acres)***
Remote frac pad at the existing RWF 24-4 Pad	Development	Fracture stimulation equipment, frac tanks	N/A	Remote frac site servicing multiple well pads, temporary surface high pressure frac pipelines, multiple frac tanks, pump trucks, sand trucks	N/A	2.1	0	2.1
<b>Pipelines</b>								
New gas pipelines not collocated with new roads	Exploration and Development	Adjacent to new access roads is not practical	N/A	N/A	Gas lines installed to each well pad	2	0	2
New gas pipelines collocated with new roads	Exploration and Development	Adjacent to new access roads	N/A	N/A	Gas lines installed to each well pad	N/A	N/A	N/A
Condensate pipelines	Development	Adjacent to existing access roads; collocated with gas line	N/A	N/A	Condensate lines that terminate at centralized collection facility	N/A	N/A	N/A
Produced water pipelines	Development	Adjacent to existing access roads; collocated with gas line	N/A	N/A	Produced water lines that terminate at centralized collection facility	N/A	N/A	N/A
Temporary frac water transfer lines	Exploration and Development	Adjacent to existing access roads; temporary surface lines	N/A	N/A	Produced water and condensate lines that terminate at centralized collection facility	N/A	N/A	N/A
<b>Total Disturbance</b>						<b>30.9</b>	<b>15.88</b>	<b>15.02</b>

\* Working area is comprehensive in that it includes new long-term disturbance, new short-term disturbance, and further disturbance of areas of existing disturbance.

\*\* Long-term disturbance could extend up to 35 years.

\*\*\* Short-term disturbance would be reclaimed within 1 to 2 years.

**Table 4. Traffic Estimates for  
Exploration Phase Drilling and Well Completion for Eight Wells**

Trip Type	Roundtrip Frequency
<b>Drilling (1 conventional drilling rig, 4 well pads, 8 wells, 17 days per well, 136 days total)</b>	
Drilling rig crews (1 rig, 2 crews/rig)	2/day
Conventional drilling rig move <sup>a</sup>	10/pad
Drill bit/tool delivery	6 biweekly
Mechanics/Welders	4/week
Supply delivery	4/week
Fresh water truck <sup>b</sup>	3/day
Fuel trucks	5/week
Wireline unit	2/well
Cement trucks and crew	12/well
<b>Subtotal</b>	<b>1,171 trips within 136-day period</b>
<b>Completion (1 rig, 4 well pads, 8 wells, 4 days per well, 32 days total)</b>	
Service rig (or coiled tubing unit or snubbing unit) <sup>c</sup>	4/well
Service rig crew	1/day
Wireline unit	6/well
Consultant	2/day
Frac/produced water trucks <sup>d</sup>	160/well
Pump trucks	6/well
Sand trucks	6/well
Equipment trucks (frac tanks)	50/pad
Equipment trucks (other equipment)	2/well
Testing and operations	8/well
<b>Subtotal</b>	<b>2,116 trips within 136-day period</b>
<b>TOTAL</b>	<b>3,287 trips</b>

<sup>a</sup> Four trucks and a crane would be required to move each rig to and from each well pad within the SCMDP. Unlike efficiency rigs, conventional rigs require some equipment to “skid” to the adjacent location on a pad. When drilling is complete on a pad, the rig would move to the next pad or outside the SCMDP.

<sup>b</sup> Williams contracts with trucking companies who have their own legal sources of water to provide fresh water for drilling purposes and dust control.

<sup>c</sup> During the completion process, any or all of these types of units may be used. The average use for all such units per well is noted.

<sup>d</sup> On average, a well will require 4,000 barrels of water for each fracture stimulation stage, and there may be as many as seven stages per well. This water is supplied by Williams’ water recycling facilities located in the Grand Valley and Rulison Fields. The frac water is recycled and reused for subsequent wells. As much as 50 percent of the frac water is returned within 1 week; therefore, additional trucked water is needed to replenish. The number of water truck trips noted is an estimate for two wells on one pad with a 50 percent replenishment rate and subsequent trucking of water off the pad once the wells are fully completed.

**Table 5. Traffic Estimates for  
Development Phase Drilling and Well Completion for 50 Wells**

Trip Type	Roundtrip Frequency
<b>Drilling (1 efficiency drilling rig, 4 well pads, 50 wells, 12 days per well, 600 days total)</b>	
Rig crews (1 rig, 2 crews/rig)	2/day
Efficiency drilling rig move <sup>a</sup>	16/pad
Drill bit/tool delivery	3/week
Mechanics	4/week
Supply delivery	4/week
Fresh water truck <sup>b</sup>	3/day
Fuel trucks	3/week
Wireline unit	2/well
Cement trucks and crew	12/well
<b>Subtotal</b>	<b>4,964 trips within 600-day period</b>
<b>Completion on remote frac site<sup>d</sup> (4 pads, 50 wells, 4 days per well, 200 days total)</b>	
Frac/produced water trucks <sup>e</sup>	<ul style="list-style-type: none"> <li>• 160 to remote frac site/well</li> <li>• 0 to well pad</li> </ul>
Pump trucks	<ul style="list-style-type: none"> <li>• 6 to remote frac site/well</li> <li>• 0 to well pad</li> </ul>
Sand trucks	<ul style="list-style-type: none"> <li>• 6 to remote frac site/well</li> <li>• 0 to well pad</li> </ul>
Equipment trucks (frac tanks)	<ul style="list-style-type: none"> <li>• 32 to remote frac site/well</li> <li>• 0 to well pad</li> </ul>
Testing and operations	<ul style="list-style-type: none"> <li>• 0 to remote frac site</li> <li>• 2 to well pad/day</li> </ul>
<b>Subtotal</b>	<b>11,800 trips within 200-day period</b>
<b>TOTAL</b>	<b>16,764 trips</b>

<sup>a</sup> Eight trucks and a crane would be required to move an efficiency rig to and from each well pad within the SCMDP area. Unlike conventional rigs, efficiency rigs do not require outside equipment to “skid” to the adjacent location on a pad. When drilling is complete on a pad, the rig would move to the next pad or outside the SCMDP area.

<sup>b</sup> Williams contracts with trucking companies who have their own legal sources of water to provide fresh water for drilling purposes and dust control.

<sup>c</sup> During the completion process, any or all of these types of units may be used. The average use for all such units per well is noted.

<sup>d</sup> On average, a well will require 4,000 barrels of water for each fracture stimulation stage, and there may be as many as seven stages per well. This water is supplied by Williams’ water recycling facilities located in the Grand Valley and Rulison Fields. The frac water is recycled and reused for subsequent wells. As much as 50 percent of the frac water is returned within 1 week; therefore, additional trucked water is needed to replenish. The number of water truck trips noted is an estimate for two wells on one pad with a 50 percent replenishment rate and subsequent trucking of water off the pad once the wells are fully completed.

<sup>e</sup> Assuming no water replenishment system in place.

## **Pad Design, Construction, Restoration, and Abandonment**

Figure 1 and Table 3 present the proposed system of pads in the SCMDP area. The three main pad functions associated with the proposed project include:

- Well pads: consist of wellheads, separators, and temporary completion equipment (flowback units and tanks).
- Frac pads: consist of sufficient space to temporarily hold equipment required to perform fracture stimulation services.
- Production pads: consist of any tankage required to hold produced water or condensate.

Williams proposes to construct three new well pads and expand one existing new well pads, all of which would be fraced remotely from a single centralized frac pad (Figure 1, Table 3). The working pad size includes the areas that would be used during construction, drilling, and completion activities. Efficiency rigs require a larger working pad size compared to conventional rigs to accommodate the equipment necessary to drill more wells in one location. Each of the four well pads would ultimately be designed and built to a size that would accommodate efficiency drilling rigs, while keeping surface disturbance to a minimum at each well pad location. For the exploration phase at these well pads, the well pads may be built large enough to accommodate efficiency rigs, or the well pads may initially be built only to accommodate conventional rigs and then enlarged at a later date to prepare the well pad for efficiency rig drilling. After completion operations, all of these pads would be reduced in size to a long-term footprint.

The proposed action also includes the use of one existing well pad (Figure 1, Table 3), Federal Rulison 7-94-S 0-4. This pad would be expanded to a working pad size that would accommodate an efficiency rig and, after completion operations, would be reduced in size to a long-term footprint that is approximately equal to the current pad size. Production equipment associated with wells on this pad would be located on a newly constructed pad adjacent to the access road. Additional proposed pads include one remote frac pad in the southwestern quarter of Section 4 that would be reclaimed once completion of the last well drilled is finished. This pad would not be used as a drilling location (Figure 1, Table 3). Each pad would be leveled using cut and fill construction techniques, where needed. The top 6 to 8 inches of soil (more if available) and associated vegetative material would be removed and stockpiled prior to constructing each pad. Stormwater controls would be installed on all pads, as needed.

For the exploration phase, one reserve pit for drilling muds would be used at each drilling location. The reserve pits would be designed and constructed according to BLM requirements. Williams uses water-based drilling muds that do not contain hazardous substances. Material safety data sheets (MSDSs) would be available at each well pad location. The reserve pits would be open to allow for evaporation of pit fluids, as allowed under Federal and state regulations. Reserve pit fluids would be evaporated, removed, or solidified, and the pits would be closed as soon as practical but no longer than current regulations allow (typically within 1 year from the date drilling operations reached total depth).

A reserve pit is not required for efficiency rigs because they operate using a closed system. However, the need to dispose of the cuttings remains. Therefore, instead of a reserve pit, a cuttings trench would be constructed to contain the cuttings. This trench is typically at the same location as the drilling rig and constructed large enough to handle all of the cuttings generated. All produced well cuttings would be disposed in trenches specifically sized for their volume (approximately 500 cubic yards per well) with all stormwater controls specified by state and Federal regulations. In cases where the necessary volume is unavailable on site (i.e., due to unforeseen events such as bedrock that prohibits deep trenches), a backup site may be needed. This site would be constructed to meet all the applicable regulations.

With all pads combined, the proposed action would result in up to 15.88 acres of long-term (up to 35 years) disturbance from pads. With all pads combined, the proposed action would result in an additional 15.73 acres of short-term (1-2 years) disturbance from pads. Because the proposed action is phased development, for the SCMDP as a whole, pad construction and drilling would occur periodically throughout the 4-year drilling period. The timing of pad work would be dependent upon the drilling schedule (Table 2); pads would be constructed or expanded periodically as needed for drilling.

In addition to the pads discussed above, there are expected to be 2 staging areas strategically placed throughout the SCMDP area to aid in construction of pipelines and associated facilities (Table 3, Figure 1). Staging areas would be approximately 1 acre and would be located within disturbances associated with pipeline, road, or pad construction, so would not contribute additional surface disturbance to the total disturbance within the EA area.

Williams would completely reclaim all disturbed areas that are not needed for production operations through the BLM's reclamation COA (Appendix to be completed with EA) and the interim and final reclamation procedures presented in Section 2.8 Best Management Practices, Design Features, and Mitigation Measures.

### **Drilling Operations**

All wells would be directionally drilled to locations within the Federal leases held by Williams (lease numbers COC046030, COC006935, COC063721, and COC056040,) or fee leases held by Williams. Figure 1 illustrates the boundaries of these leases.

Within this portion of the Piceance Basin, drilling wells from the surface to their total depth takes up to 25 days using conventional rig technology or efficiency rig technology.

Fresh water for use in drilling operations and dust control would be obtained from authorized sources through contractors who have their own legal sources of water. Water would be trucked to the site. The actual volume of water used in drilling operations would depend on the depth of the well and any losses that might occur during drilling. Approximately 260 barrels of water (10,000 gallons) would be needed to drill each well, for a total of up to 620,000 gallons (1.902 acre-feet) of water for the proposed drilling operations. This estimate also includes any water that would be needed for dust control on access roads.

No oil or other oil-based drilling additives, chromium/metals-based mud, or saline mud would be used during drilling of the proposed wells. Only fresh water, biodegradable polymer soap, bentonite clay, and non-toxic additives would be used in the mud system. Any produced crude oil or condensate would be contained in onsite test tanks.

Depending on the location, each producing well would be drilled to an approximate depth of 6,000 feet to 8,000 feet (measured depth [MD]). Natural gas would be produced through perforations in the casing (see completion operations). The well control system would be designed to meet the conditions likely to be encountered in the hole and would conform to BLM requirements.

During the development phase, drill cuttings would be managed by burying them in the cuttings trench, as described above. Each well would generate approximately 500 cubic yards of cuttings. The cuttings are generally managed as they are generated so that once all the wells are drilled, all that remains is to cap the trench with native soils and recontour the area. If the size of the well pad is not sufficient to support a cuttings trench large enough to hold all of the cuttings, an offsite cuttings disposal site may be required.

## **Completion Operations**

Completion operations are processes applied to the well bore after drilling has finished. These steps include running casing, perforating casing, and fracing, steps necessary to produce hydrocarbons from a well.

Fracture stimulation is a method for stimulating a rock formation next to a well bore to increase production of oil, gas, and other fluids from the rock formation. Fracture stimulation consists of pumping a water and proppant (sand) mixture at high rates and pressures into the rock intervals that contain natural gas. The water is produced back leaving the proppant behind to keep the small fracture open. A fracture stimulation stage is the particular subsurface zone being fracture stimulated at any given time. Each proposed well would use approximately 170,000 gallons of water per fracture stimulation stage, and there would be five to seven fracture stimulation stages per well. The water used for completion operations would be recycled produced water from wells operated by Williams throughout the valley. It is not anticipated that other sources of water would be necessary.

### ***Exploration Phase – Conventional Drilling***

Fracture stimulation and other completion operations during the exploration phase would be conducted onsite at each well pad. The fracture stimulations are typically conducted without a service rig and consist of pump trucks, sand trucks, and frac tanks. Mobile wireline trucks would be used to set plugs between zones and to set plugs in the wellbore to isolate the stimulations. Once the wells have completed all of the fracture stimulations, a mobile service rig (or coiled tubing unit or a snubbing unit) would be used to drill out all the plugs, clean out the wellbore, and land the production tubing.

Completion operations are expected to average 20 to 25 days per well, which includes all of the time to fracture stimulate each zone, drill out the plugs, and install the production tubing. During this time, natural gas is expected to be sold instead of vented or flared, as it is anticipated that gas gathering lines would be in place prior to the completion. If not, the well may be shut in or the gas may be vented for up to 30 days or until the gas gathering line is in place, whichever is less.

All water produced during this time would be recycled for use in subsequent fracture stimulations, and the condensate produced would be stored in tanks for sale.

### ***Development Phase: Efficiency Drilling***

Using SIMOPS, the time to complete a well drilled with an efficiency rig would be the same as with a conventional rig; however, drilling and completion operations would be done simultaneously. As drilling for one well completes, the drilling rig moves either laterally or down the cellar<sup>1</sup> to the next new well surface location. Once four drilled wells are exposed, completion procedures can begin on the exposed, previously drilled well heads. Using SIMOPS, the completion operations do not need to wait until all wells have been drilled and the drilling rig moves off location.

Frac equipment would be located at a centralized location, as noted in Table 3, while completion equipment would be located on the pad containing the wells being completed. Fracture stimulation during the development phase would be conducted from the proposed remote frac pad for all four well pads (Figure 1).

Either temporary surface or buried pipelines would be used to transport completion fluids between the remote frac site and the well pad at which completion operations are being conducted.

Flowback fluids would be processed through flowback units on the well pad to separate the sand from the gas and liquids and subsequently processed in a three-phased separator to separate the gas from the produced water and condensate. The gas would be metered and delivered to the gas gathering system. The water and condensate would be separated and sent to tanks. Produced water would be recycled for subsequent fracture stimulations or transported by truck or pipeline to approved collection facilities. Condensate would be tank gauged and sold via truck.

### **Well Production Facilities**

Production facilities would be designed and installed to accomplish the following objectives:

1. Separate well stream fluids into manageable products (gas, condensate, and water) from each well individually.
2. Deliver each product to its ultimate destination. Natural gas would be delivered to the gas gathering system via pipeline. Condensate would be pipelined or trucked to a point at which it can be sold, and water would be transported via pipeline or truck to its next destination (either the Rulison Evaporation Facility or the site of future fracture stimulation staging areas).
3. Accurately meter the volume of gas and condensate produced from each well/lease to assure mineral interest owners receive the correct value for these components. Each well can be controlled (choked) separately and production rates can be determined for each well every day. Natural gas would be metered prior to entering the gas gathering system. Condensate would be tank gauged or metered prior to sales.

To the extent feasible, Williams would consolidate the use of production facilities. The proposed system of gathering lines in the SCMDP is presented in Figure 1 and Table 3, which consists of installation of new pipelines and upgrading of existing pipelines.

### ***Exploration Phase: Conventional Drilling***

During the exploration phase, the production equipment located onsite at each well pad would consist of one separator per well and one blow-down condensate tank. Produced water and condensate would be transported from each well pad to the centralized collection site via buried pipelines (Table 3).

A gas gathering pipeline would be installed from each well pad site to transport gas to its final destination. The gas gathering pipelines would be constructed with steel pipe rated to handle the expected pressures and temperatures. This pipe would be buried where appropriate. Where possible, the gathering system would be located adjacent to access roads. Because the proposed action is phased development, for the SCMDP as a whole, installation of the gas gathering pipeline system would occur periodically throughout the 4-year period as pads are drilled and wells are brought onto production.

Pipeline construction would occur within a 50-foot wide easement, which is the maximum anticipated surface disturbance from this activity. The proposed action includes approximately 10,903 feet of gas pipeline construction and upgrades, of which 1,740 feet would not be located in existing ROW or collocated with proposed roads. This would result in up to 2 acres of surface disturbance (Table 3). These impacts would be short-term, as pipeline corridors would be reclaimed to BLM specifications (Appendix to be completed with EA) as soon as practical after trenching and backfilling are complete (within 6 to 9 months). After construction, cut and fill slopes would be water-barred or regraded to conform to the surrounding topography and reclaimed to predisturbance appearance.

### ***Development Phase: Efficiency Drilling***

The equipment required for production during the development phase includes one separator per well (usually bundled into units that can handle four wells each), as well as multiple water and condensate tanks (Table 3). Prior to the drilling of wells by the efficiency rig, production facilities would be installed for all four of the pads planned for efficiency drilling. Installation of these facilities prior to the drilling of the wells is necessary in order to perform SIMOPS.

During the development phase, gas would be metered at each separator and delivered down steel gas pipelines, as described for the exploration phase.

Once separated, the condensate would be conveyed down a dedicated condensate pipeline (installed in the same trench as the gas lines) to a central water and condensate tank facility (as noted in Table 3). There would be a separate condensate pipeline for each mineral interest for royalty purposes. As the ownership of the condensate is the same for all of the wells sharing a condensate tank, individual production rates are not necessary for allocation of revenue; however, condensate production would be metered on each condensate pipeline. There would be one condensate tank on the SR 33-9 to hold the condensate from a well drilled in lease COC63721. This well's condensate cannot be commingled with the other wells on this pad.

The produced water would also be conveyed by a pipeline that terminates at a centralized collection facility (as noted in Table 3).

Condensate and water lines that are installed as part of this project would be collocated with the gas gathering system; therefore, these pipelines would not contribute to the total acres of surface disturbance. By transporting the condensate and water down pipelines to central locations, trucking to recover fluids (condensate and water) is substantially reduced.

No new compressor stations are anticipated within the SCMDP.

### **Production Operations and Maintenance**

Williams would operate all wells, pipelines, and ancillary production facilities in a safe manner, as set forth by standard industry operating guidelines and procedures. Routine maintenance of producing wells would be necessary to maximize performance and to recover all of the economic reserves possible. Critical data for each well would be accessible via telemetry with the host computer system in Williams' Parachute, Colorado office. Using this system, daily travel to each location is not necessary, as the parameters can be viewed and controlled remotely. Each well location would be visited several times per week to ensure that operations are proceeding in an efficient and safe manner. The visits would include checking separators, meters, valves, fittings, and onsite storage of produced water and condensates. The onsite equipment also would be routinely maintained, as necessary. Additionally, all roads and well locations would be regularly inspected and maintained to minimize erosion and assure safe operating conditions.

The exploration phase of the proposed action would be used to assess the productivity of the downhole resources accessed by each well pad and to select well pads for further development. All four well pads are proposed for both exploration and potential full development under this proposed action (**Table 2**). Wells may be plugged and abandoned and well pads reclaimed if the wells are dry or non-producing.

## **Best Management Practices, Design Features, and Mitigation Measures**

This section presents best management practices (BMPs), design features, and mitigation measures that would be incorporated during implementation of the proposed action to minimize impacts to environmental or natural resources. Measures to be incorporated are also presented in the Master APD (Williams 2006).

### ***General***

- Williams would implement BMPs consistent with its environmental programs and in accordance with recommended state and Federal guidance and regulations. Existing disturbed areas would be used to the maximum extent practical.
- Any spills or releases of regulated wastes or materials would be investigated, responded to, and remediated in accordance with BLM, Colorado Oil and Gas Conservation Commission (COGCC), and Colorado Department of Health and Environment (CDPHE) regulations and guidance.

### ***Construction***

- Well pads, access roads, and ancillary facilities have been located and will be constructed and maintained to avoid or minimize disturbance to natural and cultural resources, including perennial and intermittent streams, wetlands, and wildlife.
- New roads would be constructed and existing roads maintained in accordance with the minimum standards for a BLM Resource Road, as outlined in BLM Manual 9113, and construction details outlined in the conditions of approval (Appendix A, Number 2).
- For all construction activities, stormwater controls would be placed to control erosion and sediment and materials runoff, in accordance with BLM requirements and state (CDPHE) stormwater regulations, permits, and plans.
- All construction activities that may affect “waters of the United States” as defined by Federal regulation would be evaluated to determine applicability of the U.S. Army Corps of Engineers (USACE) 404 permitting process, including Nationwide Permits.
- Water free of unacceptable contaminants, substances, or materials would be used for dust abatement, where deemed necessary. This water would be obtained from authorized sources, typically through contractors who have their own legal source of water.
- Signs would be posted as required by BLM to control traffic hazards and speed.

### ***Drilling and Completion***

- All materials used for drilling and completion operations would be managed to avoid or minimize the potential for an-offsite release. This may include berms, tarps, diversion ditches, and other acceptable methods. During the time that reserve pits are open, the pits would be closed off from wildlife and livestock by two strands of barbed wire above a woven wire fence.
- Water-based drilling muds would be used during the drilling process. MSDS sheets would be maintained onsite for both drilling and completion materials.
- All non-hazardous waste materials would be disposed of as required by state and county regulations.

- Closed loop drilling mud systems would be used with efficiency rigs. If reserve pits are used to contain fluids, they would be evaluated under Williams' Migratory Bird Management Plan to determine the need for netting or other exclusionary methods to protect wildlife.
- Completion fluids would be recycled as much as possible on the same location as the frac pumps to minimize trucking.

### ***Production Equipment and Pipelines***

- Topsoil and overburden material would be stockpiled and segregated.
- To minimize surface disturbance, wheel trenchers (ditchers) or ditch witches would be used where possible to construct pipeline trenches.
- If trenches greater than 0.25 mile in length are open for the installation of pipelines, Williams would consult with BLM to determine the need for plugs and access bridges to allow livestock and wildlife to cross the trench.
- Pipelines would be reclaimed within 6 to 9 months with BLM prescribed seed mixes on Federal lands, and landowner prescribed seed mixes on private lands.

### ***Production Operations and Maintenance***

- Production equipment would be equipped with solar panel-powered remote communications to monitor gas, water, and condensate levels so as to minimize traffic to and from well pads. Wherever possible, equipment would be clustered in a single location.
- Following development of all wells within a prescribed area, gates and fences would be installed to allow for only required traffic to maintain production equipment and allow a workover rig every few years as dictated by maintenance needs. Public access would not be allowed on any newly constructed roads.
- All tanks would be managed in accordance with Federal Spill Prevention Countermeasures and Controls (SPCC) and BLM regulations, including Onshore Order No. 7, as applicable.

### ***Interim Reclamation***

- After completion activities, Williams would reclaim all disturbed areas not needed for production. The areas that would undergo interim reclamation are presented in Table 3 as short-term surface disturbance.
- Within 1 year of well completion, Williams would stabilize the disturbed area by recontouring, mulching, providing runoff and erosion control, seeding with BLM-prescribed native seed mixes (or sterile non-native grasses for seeding of topsoil piles), and conducting weed control, as necessary.

### ***Abandonment***

- Upon abandonment, each borehole would be plugged and abandoned and the associated surface equipment would be removed. Subsurface pipelines would be purged and 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 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 reclaimed in accordance with the GSEO reclamation policies, including the Conditions of Approval (Appendix A) and the Noxious and Invasive Weed Management Plan for Oil and Gas Operators (BLM 2007a). Reclamation would include the following objectives:

- Recontour all disturbances to approximately the topography that existed prior to construction, and respread topsoil.
- Restore primary productivity of each site and establish diverse native vegetation that provides for natural plant and community succession.
- Establish native vegetation that is a vigorous and self-sustaining stand of desirable native plant species resistant to the invasion of noxious or undesirable species.
- Monitor and control noxious weeds and other undesirable plant species inadvertently introduced due to soil disturbance during construction activities over the life of the project using 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.
- Over the long-term, restore reclaimed landscapes to characteristics that approximate the original visual qualities and plant species composition of the surrounding area.

### ***Mitigation***

Williams, with input from the BLM and livestock permit holders, has committed to developing three water development/improvement projects within the SCMDP boundaries for the benefit of wildlife:

- Developing an existing capped water well on Williams' property. A solar-powered pump would be installed to bring water to the surface and discharged into a trough on Williams' property. Excess water would be piped down the slope to a second area adjacent to BLM-managed land. The excess water would be collected in a lined pond and then allowed to run out freely onto the surface. This location would be fenced to exclude livestock while allowing wildlife to enter.
- Fencing a spring and existing pond to exclude livestock. A spring and existing pond development would be fenced to exclude livestock in order to improve water quality for wildlife and to increase the amount of wetland habitat. To maintain a source of water for livestock, water would either be piped from the existing pond to a trough outside the enclosure or a replacement pond would be developed at an appropriate location downstream. If a trough were used, excess water from the trough would be piped back into the main channel. The existing pond within the enclosure would be cleaned and rebuilt. An old homestead cabin and barn would also be included within the enclosure. The fence would be buck and rail style mixed with sections of post and pole to facilitate access for wildlife. Upon completion of the project, all disturbed areas would be reseeded with an approved seed mix and rocks would be placed to provide a barrier for use of the existing road and ATV trail.
- Developing up to five additional springs or ponds. Additional site visits identified several areas with the potential for development in addition to the two projects described above.

**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, of the 15 wells proposed on the SR 12-9 pad, only 4 are on a Federal lease. The SR 12-9 pad, therefore, would likely 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 necessarily, impacts to the affected environment would occur from the development of the private surface location. These effects provide the basis for comparison to the impacts of the proposed action.

For the purpose of the following comparative analysis, the no action alternative includes the drilling and completion of one well pad (SR 12-9) and 11 wells. The development of up to 47 wells and associated access roads and pipelines involving Federal surface and/or Federal mineral estate would not occur.

**SUMMARY OF LEASE AND GRANT STIPULATIONS**

Each of Williams’ Federal oil and gas leases include stipulations intended to protect natural resource values. Table 6 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.

**Table 6. Lease Stipulations (NSO = No Surface Occupancy, TL = Timing Limitation, CSU = Controlled Surface Use, LN = Lease Notice, AO = authorized officer)**

<b>Lease Number</b>	<b>Description of Lands</b>	<b>Stipulations</b>
COC06935 (1955)	ALL LANDS within lease	No special stipulations
COC07506 (1955)	All LANDS within lease	No special stipulations
COC46030 (1987)	ALL LANDS within lease	<b>TL:</b> 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
COC56040 (1994)	T7S R94W SEC 11:SENE,SE (Sec 11 is <b>not</b> in GAP)	<b>CSU:</b> Protecting Fragile Soils. Prior to surface disturbance of fragile soils it must be demonstrated to the authorized officer through a plan of development that the specific performance objectives will be met.
	ALL LANDS within lease	<b>LN:</b> An inventory of fossil resources in Class I and II paleontological areas must be performed by an accredited paleontologist approved by the authorized officer
	ALL LANDS within lease	<b>LN:</b> Special biological and/or botanical inventory and special mitigative measures to reduce impacts of surface disturbance to the sensitive plant or animal species may be required.

COC63721 (2000)* *No surface locations	T7S, R94W, 6 <sup>th</sup> PM Sec. 15: N2, N2S2 Sec. 13: S2NW	<p><b>CSU:</b> For the purpose of protecting fragile soils. Prior to surface disturbance of fragile soils, it must be demonstrated to the authorized office through a plan of development that the following performance objectives will be met:</p> <ul style="list-style-type: none"> <li>• Maintain soil productivity of the site</li> <li>• Protect offsite areas by preventing accelerated soil erosion</li> <li>• Protect water quality and quantity of adjacent surface and groundwater sources</li> <li>• Select the best possible site for development to prevent impacts to soil and water resources</li> </ul> <p>See lease COC63721 for further details on fragile soil classification.</p>
COC63721 (No surface locations)	T7S, R94W, 6 <sup>th</sup> PM Sec. 14: E2NW, W2SW	<b>CSU:</b> For the purpose of protecting perennial water impoundments and streams, and/or riparian/wetland vegetation activities.
	ALL LANDS within lease	<b>LN:</b> An inventory of fossil resources in Class I and II paleontological areas must be performed by an accredited paleontologist approved by the authorized officer.

## **PLAN CONFORMANCE REVIEW**

The proposed action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Glenwood Springs Resource Management Plan (BLM 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.

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 (BLM 1999).

Discussion: The proposed action is in conformance with the 1991 and 1999 Oil and Gas RMP amendments because the Federal mineral estate proposed for development is open for oil and gas leasing and development.

## **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 conducted in relation to baseline conditions described in land health assessments (LHAs) completed by the BLM. The proposed action would be located in an area that is included in the Rifle West LHA.

## **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

This section provides a description of the human and natural environmental 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 7). Only those mandatory critical elements that are present and affected are described in the following narrative.

In addition to the mandatory critical elements, other resources would be affected by the proposed action and the no action alternative. These are presented under **Other Affected Resources**.

<b>Table 7. Critical Elements of the Human Environment</b>									
<i>Critical Element</i>	<i>Present</i>		<i>Affected</i>		<i>Critical Element</i>	<i>Present</i>		<i>Affected</i>	
	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	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 Wilderness Study Areas		X		X
Native American Religious Concerns	X		X						

\* Public Land Health Standard

### **Critical Elements**

#### ***Air Quality***

#### **Affected Environment**

The SCMDP is located in a semi-arid (dry and cold), mid-continental climate regime. The area is typical of the western high country with abundant sunshine, low humidity, low rainfall, and cold, snowy winters.

The nearest meteorological measurements were collected at Rifle, Colorado (1910-2005) (WRCC 2006), approximately 7 miles northeast of the SCMDP area. The annual average precipitation at Rifle is 11.61 inches and includes an average total snowfall of 38.6 inches, with December and January being the snowiest months. Precipitation is relatively evenly distributed throughout the year. The frost-free period generally occurs from mid-May to mid-September. Table 8 shows the mean monthly temperature ranges and total precipitation amounts.

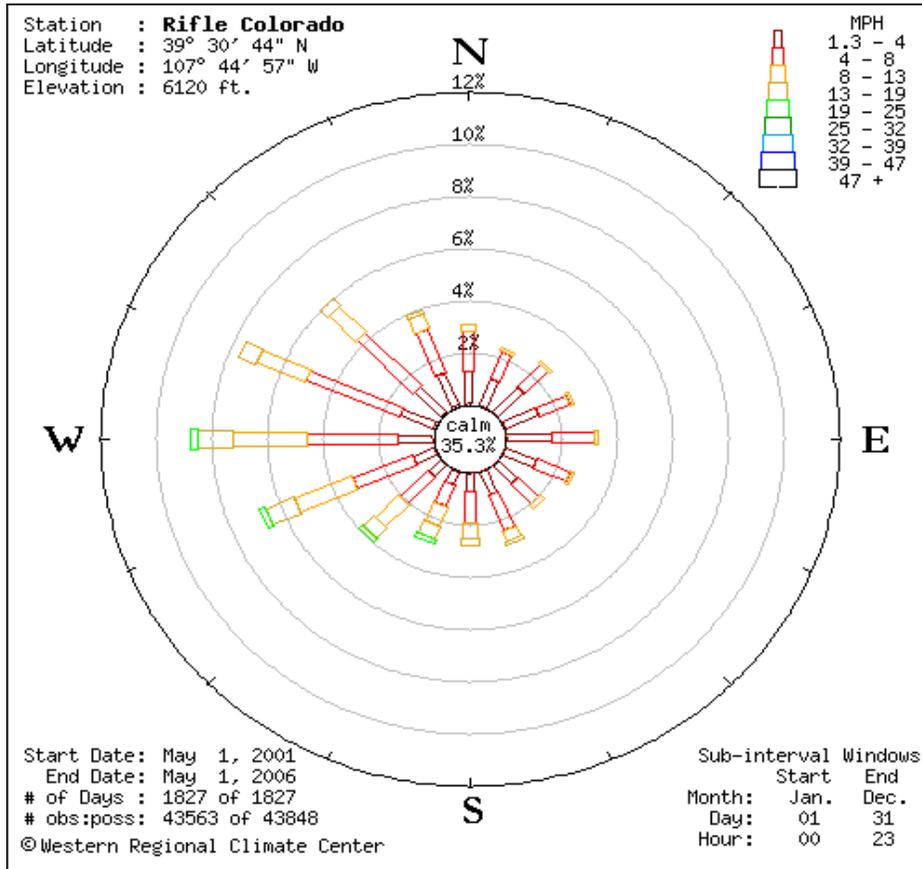
<b>Table 8. Mean Monthly Temperature Ranges and Total Precipitation Amounts in Rifle, CO</b>		
<i>Month</i>	<i>Average Temperature Range (°F)</i>	<i>Total Precipitation (inches)</i>
January	9.4 – 36.8	0.86
February	16.5 – 43.8	0.77
March	24.2 – 53.7	0.95
April	31.4 – 64.2	1.02
May	38.7 – 74.0	1.00
June	43.2 – 90.2	0.73
July	52.0 – 90.2	1.02
August	50.4 – 87.6	1.13
September	41.4 – 79.4	1.11
October	31.1 – 67.3	1.2
November	21.3 – 51.4	0.89
December	12.4 – 39.4	0.93
<b>ANNUAL</b>	<b>31.2 – 64.3</b>	<b>11.61</b>
<i>Source:(WRCC 2006)</i>		

Figure 2 shows the relative frequency of winds in Rifle, with radial distributions by speed class, indicating the direction of the wind source. From this information, it is evident that the winds originate from the northwest to southwest nearly 33% of the time. The annual mean wind speed at Rifle is approximately 4 miles per hour (mph).

The frequency and strength of the winds greatly affect the dispersion and transport of air pollutants. The potential for atmospheric dispersion is generally good, although nighttime cooling enhances stable air, inhibiting air pollutant mixing and transport. Dispersion is most likely along topographic highs such as ridges, mesas, and upper mountain slopes.

The Colorado Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) are health-based criteria for the maximum acceptable concentrations of air pollutants at all locations to which the public has access. Although specific air quality monitoring has not been conducted in-field, regional air quality monitoring has been conducted near the study area. Air pollutants measured in the region for which ambient air quality standards exist include: carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter less than 10 microns (μ) in effective diameter (PM<sub>10</sub>), particulate matter less than 2.5 μ in effective diameter (PM<sub>2.5</sub>), and sulfur dioxide (SO<sub>2</sub>). Background pollutant concentrations for these pollutants are compared to the CAAQS and NAAQS in 3.

**Figure 2. Wind Rose for Rifle, CO**



Source: WRCC - Rifle, CO meteorological data collected 2001-2006.

As shown in Table 9, regional background values are well below established standards, and all areas within the cumulative study area are designated as attainment for all criteria pollutants.

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 (PM<sub>10</sub> and PM<sub>2.5</sub>), 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 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 and fugitive dust generation. Concentrations of emissions would be below applicable ambient air quality standards as analyzed in the Roan Plateau RMPA & EIS.

Federal air quality regulations adopted and enforced by Colorado Department of Public Health and Environment (CDPHE) limit incremental emissions increases to specific levels defined by the classification of air quality in an area. The Prevention of Significant Deterioration (PSD) Program is

designed to limit the incremental increase of specific air pollutant concentrations above a legally defined baseline level. Incremental increases in PSD Class I areas are strictly limited, while increases allowed in Class II areas are less strict.

The project area and surrounding areas are classified as PSD Class II. The PSD Class I areas located within 100 miles of the project area are Flat Tops Wilderness (approx. 35 miles NE), Maroon Bells – Snowmass Wilderness (approx. 40 miles SE), West Elk Wilderness (approx. 50 miles SE), Black Canyon of the Gunnison National Park (approx. 45 miles S), Eagles Nest Wilderness (approx. 80 miles E), and Arches National Park (approx. 75 miles SW). Dinosaur National Monument (approx. 65 miles NW) is listed as a Federal Class II area but is regulated as a Class I area for SO<sub>2</sub> by CDPHE. These sensitive areas have the potential to be impacted by cumulative project source emissions. Regional background pollutant concentrations and NAAQS, CAAQS, and PSD Class I and II Increments are also presented in Table 9.

<b>Table 9. Air Pollutant Background Concentrations, Colorado and National Ambient Air Quality Standards, and Prevention of Significant Deterioration (PSD) Increments (<math>\mu\text{g}/\text{m}^3</math>)<sup>1</sup></b>				
<b><i>Pollutant/Averaging Time</i></b>	<b><i>Measured Background Concentration</i></b>	<b><i>Colorado and National AAQS</i></b>	<b><i>Incremental Increase Above Legal Baseline PSD Class I/ II</i></b>	
Carbon Monoxide (CO) <sup>2</sup> 8-hour	1,145	10,000	n/a	n/a
Nitrogen dioxide (NO <sub>2</sub> ) <sup>3</sup> Annual	9	100	2.5	25
Ozone (O <sub>3</sub> ) <sup>4</sup> 8-hour	145	157	n/a	n/a
Particulate Matter (PM <sub>10</sub> ) <sup>2</sup> 24-Hour	41	150	8	30
Annual	11	50	4	17
Particulate Matter (PM <sub>2.5</sub> ) <sup>5</sup> 24-Hour	18	65	n/a	n/a
Annual	8	15	n/a	n/a
Sulfur dioxide (SO <sub>2</sub> ) <sup>6</sup> 3-hour (NAAQS)	24	1,300	25	512
3-hour (CAAQS)	24	700	25	512
24-hour (NAAQS/CAAQS)	13	260	5	91
Annual (NAAQS/CAAQS)	5	80	2	20

<sup>1</sup>  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter.  
<sup>2</sup> Background data collected at American Soda, Piceance 2003-2004 (CDPHE 2006).  
<sup>3</sup> Background data based on a rural default that is based on Southern Ute stations near Ignacio (CDPHE 2006).  
<sup>4</sup> 8-hour ozone based on CASTNET in Mesa Verde, Canyonlands, and Gothic (CDPHE 2006).  
<sup>5</sup> Background data collected at 515 Patterson, Grand Junction, CO (CDPHE 2006).  
<sup>6</sup> Background data collected at Unocal 1983-1984 (CDPHE 2006).

CDPHE, under their EPA-approved State Implementation Plan, is the primary air quality regulatory agency responsible for determining potential impacts once detailed industrial development plans have been made, and those development plans are subject to applicable air quality laws, regulations, standards, control measures, and management practices. Therefore, CDPHE has the ultimate responsibility for reviewing and permitting the project prior to its operation. Unlike the conceptual “reasonable, but conservative” engineering designs used in NEPA analyses, any CDPHE air quality preconstruction

permitting demonstrations required would be based on very site-specific, detailed engineering values, which would be assessed in the permit application review.

### Environmental Consequences

#### *Proposed Action*

The Roan Plateau RMPA and EIS describe potential effects from oil and gas development (BLM 2006:4-26 - 4-37). Analysis was completed with regard to greenhouse gas emissions, a near-field and far-field analysis for carbon monoxide, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), 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 and EIS. However, it is anticipated that construction and production activities would 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 A).

#### *No Action Alternative*

The no action alternative includes the drilling and completion of 11 wells at one well pad (SR 12-9). The development of up to 47 wells and associated access roads and pipelines involving Federal surface and/or Federal mineral estate would not occur. Pad construction, well development, and workovers would provide the majority of dust generation and equipment emissions.

### ***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 Spruce Creek project area, whether the surface ownership is Federal or private.

The SCMDP area covers a total of approximately 690 acres. Nine cultural resource investigations (GSFO# 769, 778, 902, 1114, 1161, 1174, 1006-20, 1104-4, and 1107-34) conducted within the current project boundary. Most of these have been carried out for fluid mineral exploration and development activities and have produced reports covering existing gas wells, access roads, pipelines, road improvement projects, and transmission lines. The most recent Class III cultural resource inventory (GSFO#1107-34) was undertaken specifically for the SCMDP project by Grand River Institute (GRI) in July of 2007. The studies listed above are identified by their Glenwood Springs Field Office (GSFO) project numbers.

The acreage investigated by the GRI Class III cultural resource inventory report for the SCMDP area totaled 1,300 acres. This inventory was based on an earlier Spruce Creek project area boundary that was later reduced to 690 total acres.

The SCMDP area includes 16 recorded cultural resources. Of these, three were identified as sites, though only two of these are eligible or potentially eligible for inclusion on the National Register of Historic Places (NRHP), and are considered to be a “historic properties.” A homestead site (5GF1301) was determined as not eligible and 13 cultural resources identified as isolated finds (IF’s) are by definition are not eligible to the NRHP. The two historic properties within the current SCMDP project area consist of a multi-component site (5GF875, which contains both a historic homestead and prehistoric elements), and a prehistoric open campsite (5GF4060).

### *Proposed Action*

#### Environmental Consequences

The proposed action has some potential to affect cultural resources identified in the SCMDP project area. For prehistoric archaeological sites, direct impacts result primarily from disturbance of surface and subsurface sediments. For historic sites 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, although they can happen any time the ground is subject to alteration.

Direct impacts to historic properties would be avoided by the proposed action as currently planned for the SCMDP project area. Fourteen of the cultural resources within the project area are not considered historic properties and avoidance was not required as recording was deemed to fulfill the intellectual information inherent in the resource. However, direct impacts to previously undiscovered cultural resources could occur within the SCMDP project area.

Spring/pond improvement would take place within the project area in the vicinity of the historic property 5GF875, as part of wildlife mitigation for the SCMDP. One portion of this spring/pond improvement would include constructing a livestock exclusion fence around the historic component of the site. The prehistoric component is not eligible for the NRHP by itself, and not included within the livestock exclusion fence.

The proposed action would alter the environmental setting of the project area. It would also affect access to the lands within the SCMDP area, primarily by upgrading existing roads/two-tracks and 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 SCMDP area would 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 A (Number 16).

No formal consultation was initiated with the Colorado State Historic Preservation Officer (SHPO), as all historic properties identified during the inventories would be avoided by various methods including rerouting and/or relocation of facilities. Based upon the Class III inventories and the avoidance of all historic properties, the BLM made a determination of “**No Historic Properties Affected**” for Williams Productions proposed actions within the SCMDP area. 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)].

A standard Education/Discovery condition of approval for cultural resource protection would be attached to the APD(s) (Appendix A, Number 16). The importance of this COA should be stressed to operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered during drilling and development operations. The proponent and subcontractors should also be aware of requirements under the Colorado Statutes for Human Burials (CRS 24-80-1301, CRS 24-80-1302, and CRS 24-80-405).

#### *No Action Alternative*

#### Environmental Consequences

The no action alternative constitutes denial of the APDs associated with federal lands and minerals within the proposed project area. Under this scenario, new surface disturbance associated with Federal lands and minerals within the SCMDP area, including the construction of pads, access roads, pipelines, and ancillary facilities to access the Federal leases, would not take place. As a consequence, both known and undiscovered cultural resources and historic properties would see fewer impacts and the potential degradation of site condition and integrity could be reduced or eliminated.

#### *Invasive Non-native Species*

#### Affected Environment

Nine species of Colorado State-listed noxious weeds were observed within the SCMDP (WWE 2007). These species were typically found along existing roads, pads and pipelines in the project area; however, cheatgrass (*Anisantha tectorum*), a List C noxious weed, was present throughout most of the project area.

Field bindweed (*Convolvulus arvensis*), a List C noxious weed, was widespread on disturbed sites. Canada and musk thistle (*Cirsium arvense*, *Carduus nutans*), List B species, were found on existing pad 7-94-S and a few other disturbed locations. Houndstongue (*Cynoglossum officinale*), a List B noxious weed, was scattered throughout the project area. Diffuse knapweed (*Centaurea diffusa*), a List B species uncommon to the area, was found in one location, along the existing access road adjacent to proposed pad SR 24-9. Other noxious weeds found in the project area include common mullein (*Verbascum thapsus*), common burdock (*Arctium minus*), and plumeless thistle (*Carduus acanthoides*).

#### Environmental Consequences

#### *Proposed Action*

Surface-disturbing activities provide a niche for the invasion and establishment of invasive non-native species, particularly when these species are already present in the surrounding area. Because a variety of invasive, non-native species are already present in the project area, the potential for invasion following construction activities is high. Mitigation measures designed to minimize the spread of these species are presented in Appendix A (Number 8).

#### *No Action Alternative*

Under the no action alternative, none of the proposed ground disturbance on BLM land would occur; however the proposed SR 12-9 pad on private land would still be constructed. The potential for weed invasion on BLM land would be much less than under the proposed action, but construction of the pad on private land could create a potential source of weed introductions, as would continued operations and

maintenance activities associated with the existing pads and associated wells, roads, and pipelines on BLM and private surface in the vicinity of the project.

## ***Migratory Birds***

### Affected Environment

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), three species of conservation concern, the 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 (*Polioptila caerulea*).

A variety of raptor species are known to exist in this area, including, but not limited to: Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), turkey vulture (*Cathartes aura*), golden eagle (*Aquila chrysaetos*), northern harrier (*Circus cyaneus*), Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). Raptor nesting habitat within the project area consists of mature juniper woodlands, mature Gambel oak woodlands, scattered narrowleaf cottonwoods, aspen, and Douglas-fir trees. The majority of suitable nesting habitat occurs as mature stands of juniper and Gambel oak. A raptor survey was conducted by WestWater Engineering (WWE) during June and July of 2007. No active nest sites were identified within 0.25 mile of the greater SCMDP project area. 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 two Cooper's hawks and one sharp-shinned hawk flying over the project area during the surveys (WWE 2007).

The project area is largely composed of pinyon-juniper and mountain shrub communities. As such, pinyon jays and black-throated gray warblers have the potential to occur in the project area. The primary suitable habitat for nesting would be in the mature pinyon-juniper woodlands in Section 4. Pinyon jays typically display defensive responses to human intrusion into their communal nesting territories, which aid in the detection of nesting territories. However, behavior of this type was not noted during the survey (WWE 2007).

Virginia's warblers were heard singing in the southern portion of Section 9 south of Garfield County Road 350 but no nests were observed (WWE 2007). The mature Gambel oak habitat is suitable nesting habitat for this species.

No active or inactive raptor nests were found in the project area during the field survey. The pinyon-juniper woodlands in Sections 3 and 4 appeared to have suitable height and age structure to support nesting raptors. Raptor nesting habitat within the project area consists of mature juniper woodlands, mature Gambel oak woodlands, scattered narrowleaf cottonwoods, aspen and Douglas-fir trees. Suitable nesting habitat occurs throughout the project area but appears to be concentrated in the mature stands of juniper trees (WWE 2007).

Bald eagles are known to occupy the Colorado River corridor, particularly during the winter months from late November through March when migratory eagles are present. No bald eagle roost sites or nests are known within the project area. Bald eagles may forage within the project area; deer and elk carcasses often provide carrion food sources for eagles during winter months (WWE 2007).

Northern goshawks are known to utilize pinyon-juniper habitat in the Piceance Basin for nesting. However, this habitat type is not known to be used by northern goshawk in the Parachute Creek-Rulison area and no records of use could be found (WWE 2007). The mountain shrub habitat in Section 9 has few trees of sufficient size to be suitable northern goshawk nesting habitat.

### Environmental Consequences

#### *Proposed Action*

The proposed action would result in the development of one existing and three new well pads and associated roads and pipelines in mostly undisturbed avian habitat, causing the direct loss of a maximum of 31 acres currently available for foraging and nesting. With interim reclamation, long-term habitat loss would total 16 acres. 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 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 species that prefer open areas 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 SCMDP area, would reduce the value of habitat available to migratory birds.

Research indicates that the 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 useable 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.

To minimize impacts to migratory birds including BCC species, a Timing Limitation (TL) is included as a Condition of Approval (COA). Under the TL, all surface-disturbing activities are prohibited from May 1 to June 30. An exception to this COA would be granted if nesting surveys conducted no more than one week prior to surface-disturbing activities indicate that no BCC species are nesting, or otherwise present within or adjacent to the area of surface disturbance (Appendix A Number 12).

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 with 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 A (Number 11).

No direct effects to nesting raptors are expected as a result of the proposed action. Upland foraging habitat for raptors is abundant in the area, and the proposed action should not indirectly affect raptor foraging behavior. Raptor nest surveys for the SCMDP area in 2007 did not result in location of raptor nest structures within 0.25 mile of a proposed well pad or 0.125 mile of an access road, pipeline, or other surface facility. Although BLM considers surveys conducted for a NEPA Environmental Assessment to be valid for 5 years, new nests may be built and occupied between the initial surveys and project implementation. To ensure compliance with the Migratory Bird Treaty Act, the operator is encouraged to initiate construction or drilling activities outside the raptor nesting season (February 1 to August 15) if practicable. If initiation of construction or drilling during these dates cannot be avoided, Williams would be responsible for complying with the Migratory Bird Treaty Act, which prohibits the “take” of birds or active nests (those containing eggs or young), including nest failure caused by noise and human activity (Appendix A, Number 10).

Mitigation measures identified in the proposed action would benefit migratory birds by protecting wetlands from livestock use and by creating new sources of available water.

#### *No Action Alternative*

The no action alternative includes the drilling and completion of 11 wells at one well pad (SR 12-9). The development of up to 47 wells and associated access roads and pipelines involving Federal surface and/or Federal mineral estate would not occur. Noise and human activity during pad construction, well development and workovers would provide the majority of impacts to migratory birds. The voluntary mitigation would not take place and therefore, no new sources of water would be developed and an area of wetlands would not be protected under this alternative.

### ***Native American Religious Concerns***

#### Affected Environment

The Ute Indian Tribes claim this area as part of their ancestral homeland. At present, no Native American concerns are known within the project area and none was identified during the cultural resource records search or inventories. Additionally, the Ute Tribes of the Uinta and Ouray Bands (Northern Ute), Southern Ute, and Ute Mountain Ute Tribes were notified of the proposed SCMDP on June 23, 2008. No responses, questions, or requests for additional information were received by July 27, 2008. If new data are disclosed, new terms and conditions may have to be negotiated to accommodate their concerns.

#### Environmental Consequences

##### *Proposed Action*

Although there would be no direct impacts from the proposed action, indirect impacts from increased access and personnel in the vicinity of the proposed project could result in impacts to unknown Native American resources ranging from illegal collection to vandalism.

A standard Education/Discovery (COA) for the protection of Native American values would be attached to the APD(s) (Appendix A, Number 16). The importance of this COA should be stressed to operator and its contractors, including informing them of their responsibilities to protect and report any cultural

resources encountered during drilling and development operations. The proponent and subcontractors should also be aware of requirements under the Native American Graves Protection and Repatriation Act (NAGPRA) (Appendix A, Number 16) and the Colorado Statutes for Human Burials (CRS 24-80-1301, CRS 24-80-1302, and CRS 24-80-405).

#### *No Action Alternative*

The no action alternative constitutes denial of the APDs associated with Federal lands and minerals within the proposed project area. Under this scenario, new surface disturbance associated with Federal lands and minerals within the proposed SCMDP project area, including the construction of pads, access roads, pipelines, and ancillary facilities needed to access Federal minerals, would not take place. As a consequence, both known and undiscovered areas of Native American religious concerns would see fewer potential impacts and degradation of these areas' condition and integrity could be reduced or eliminated.

#### ***Special Status Species (includes an analysis of Public Land Health Standard 4)***

##### Affected Environment

##### *Federally Listed, Proposed, or Candidate Plant Species*

According to the latest species list from the U. S. Fish and Wildlife Service (USFWS) (<http://mountain-prairie.fws.gov/endspp/CountyLists/COLORADO.pdf>), the following Federally listed, proposed, or candidate plant species may occur within or be impacted by actions occurring in Garfield County: Uinta Basin hookless cactus (*Sclerocactus glaucus*), Parachute beardtongue (*Penstemon debilis*), and DeBeque phacelia (*Phacelia submutica*).

The results of June and July 2007 surveys (WWE 2007) indicate that there are no federally listed, proposed, or candidate plant species or suitable habitat for these species in the project area.

##### *BLM Sensitive Plant Species*

BLM sensitive plant species with habitat and/or occurrence records in Garfield County include adobe thistle (*Cirsium perplexans*), DeBeque milkvetch (*Astragalus debequaeus*), Naturita milkvetch (*Astragalus naturitensis*), Roan Cliffs blazing star (*Mentzelia rhizomata*), Piceance bladderpod (*Lesquerella parviflora*), and Harrington's penstemon (*Penstemon harringtonii*),

Suitable habitat in the SCMDP occurs for only one BLM sensitive plant species, Harrington's penstemon (*Penstemon harringtonii*). Habitat for Harrington's penstemon is typically open sagebrush shrublands or sagebrush with encroaching pinyon-juniper. Soils are typically rocky loams and rocky clay loams derived from coarse calcareous parent materials (basalt) ranging in elevation from 6,200-9,200 feet.

##### *Federally Listed, Proposed, or Candidate Animal Species*

According to the latest species list from USFWS (<http://mountain-prairie.fws.gov/endspp/CountyLists/COLORADO.pdf>), the following federally listed, proposed, or candidate animal species may occur within or be impacted by actions occurring in Garfield County, Colorado: Canada lynx (*Lynx canadensis*), Mexican spotted owl (*Strix occidentalis lucida*), yellow-billed cuckoo (*Coccyzus americanus*), bonytail chub (*Gila elegans*), humpback chub (*Gila cypha*), razorback sucker (*Xyrauchen texanus*), and Colorado pikeminnow (*Ptychocheilus lucius*). The bald eagle (*Haliaeetus leucocephalus*) was removed from the listed of threatened or endangered species in August 2007. The BLM now considers the bald eagle a sensitive species.

Canada Lynx – The USFWS listed the Canada lynx as threatened in the lower 48 states on March 24, 2000. Following listing of the species, biologists identified and mapped potential lynx habitat and designated lynx analysis units (LAUs) based on guidelines provided in the Lynx Conservation Strategy and Assessment Strategy (Ruediger et al. 2000). An LAU is a project-planning unit intended to provide the fundamental or smallest scale with which to begin evaluation and monitoring of the effects of management actions on lynx habitat (Ruediger et al 2000).

Statewide lynx habitat data maintained and updated by the CNHP (2002) do not depict an LAU or lynx habitat within the project area, and field surveys in the SCMDP area verified the lack of lynx habitat. The Battlement LAU and suitable lynx habitat is located approximately 1 mile south of the plan area in Sections 11, 14, and 15 (CNHP 2002).

Colorado River Endangered Fishes – Four members of the minnow and sucker families that occur in the Colorado River in western Colorado and eastern Utah are Federally listed as endangered: the Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail chub (*G. elegans*). Designated critical habitat for both the Colorado pikeminnow and razorback sucker occurs within the Colorado River and its 100-year floodplain, approximately 1.5 miles north of the SCMDP boundary (BLM 2006a; USFWS 2006). Designated critical habitat for the humpback chub and bonytail chub occurs in the Black Rocks area near the Colorado-Utah border more than 60 miles downstream of the project area. All of these species require a diversity of habitats within a large river. Low-velocity side channels, backwaters, oxbows, sloughs, and flooded bottomlands are important habitats for spawning and survival of young fish, particularly for the Colorado pikeminnow and razorback sucker (BLM 2006a).

#### *BLM Sensitive Animal Species*

The project area provides suitable habitat for the following BLM sensitive wildlife species: Great Basin spadefoot (*Spea intermontana*), midget faded rattlesnake (*Crotalus viridis concolor*), milk snake (*Lampropeltis triangulum taylori*), and bald eagle (*Haliaeetus leucocephalus*). BLM sensitive fish species that are known to inhabit the Colorado River in the vicinity of the project area include the flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*C. discobolus*), and roundtail chub (*Gila robusta*). Also, the Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) may occur in the vicinity. Habitat requirements and known distribution information for these species are as follows:

Great Basin Spadefoot – In Colorado, this species inhabits pinyon-juniper woodlands, sagebrush, and semi-desert shrublands. It ranges from the bottoms of rocky canyons to broad dry basins and stream floodplains (CDOW 2006). Great Basin spadefoots prefer sagebrush communities below 6,000 feet in elevation, although they have been found at elevations of 9,200 feet. Habitat types required for their survival include: over wintering burrow sites, temporary breeding ponds and foraging areas, and safe passages between these areas. Suitable habitat in the project area occurs near water sources in pinyon-juniper and sagebrush habitat types.

Milk Snake – The milk snake occurs in a wide variety of habitats in Colorado, including shortgrass prairie, sandhills, shrubby hillsides, canyons, and open stands of ponderosa pine in the foothills, pinyon-juniper woodlands, and arid river valleys (CDOW 2006). Suitable habitats in the project area include the pinyon-juniper habitats and the mountain shrubland habitats.

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, northeastern Utah, and northwestern Colorado, 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 project area are less suitable than the more barren south-facing areas north of Interstate 70.

Bald Eagle – The bald eagle was recently removed from the Federal list of threatened or endangered species, but is now considered a BLM sensitive species and remains protected by the Bald and Golden Eagle Protection Act. Bald eagles occupy the Colorado River corridor year-round for nesting and wintering. The lower Colorado River riparian corridor provides extensive suitable roosting habitat in the form of mature cottonwood trees. The closest suitable nest and roost trees are found approximately 1.2 miles from the northern end of the project area. The closest known active or inactive nest is located 2.0 miles from the northeast corner of the project area and 2.3 miles from the nearest well pad.

Colorado River Cutthroat Trout – Remaining populations of this species now occur mostly in headwater streams and lakes of the Colorado River drainage. This includes Battlement Creek, which is located 3.8 miles west of the project area and Beaver Creek, 2.8 miles east of the project area. They may also occur in the Colorado River, 1.2 miles north of the project area. However, the Colorado River is not considered spawning habitat for this species.

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 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 runs, while juveniles concentrate in eddies.

### Environmental Consequences

#### *Proposed Action*

#### *Federally Listed, Proposed, or Candidate Plant Species*

The results of June and July 2007 surveys conducted by WestWater Engineering (WWE 2007) indicate that there are no federally listed, proposed, or candidate plant species or suitable habitat for these species in the project area. Therefore, the proposed action would have “**No Effect**” on these species.

#### *BLM Sensitive Plant Species*

Surveys for Harrington’s penstemon were conducted in June and July 2007 by WestWater Engineering in all areas of suitable habitat within the SCMDP. Harrington’s penstemon was found throughout the Spruce Creek area; however, no Harrington’s penstemon individuals would be directly impacted by the proposed action. Roads and pads were moved to avoid direct impacts to this species. It is unknown how many total plants occur in this area, but the population appears to be quite large.

The proposed action would likely result in indirect impacts to populations of Harrington's penstemon present in the SCMDP. Indirect effects to Harrington's penstemon could include an increase in dust, weed invasion, sedimentation and erosion, and a loss of pollinators and their habitat. Potential impacts to plants from the accumulation of dust include clogged plant pores, reduced light reception, and alteration of glyphosate uptake mechanisms (Boerboom 2006, Ferguson et al. 2007). The clogging of pores can interfere with growth rates and water transpiration (Salisbury and Ross 1992).

The road-effect zone can extend several times the actual width of a road and as much as 50 meters down slope and has been documented as accounting for approximately 40% of fugitive dust within an area (Forman and Alexander 1998, Ferguson et al. 2007). Impacts from dust would decrease as activity within the project area moves from construction and completion phases to production and operations/maintenance phases. Additionally, implementation of best management practices for dust reduction would further decrease dust impacts.

Another indirect effect could be an increase in invasive weeds from ground disturbing activities. Invasive weeds could compete with Harrington's penstemon for water, nutrients, and light or change ecosystem processes, such as increasing fire regimes. Mitigation measures designed to minimize the spread of invasive species are presented in Appendix A (Number 8).

The building of pads, roads and pipelines uphill of Harrington's penstemon populations could lead to indirect impacts from soil erosion and sedimentation. These impacts would be mitigated by requiring the installation of sediment fences above potentially affected plants. If erosion and sedimentation are determined to be affecting Harrington's penstemon, additional erosion and sediment control measures would be required.

Finally, the proposed action could reduce the amount or quality of habitat needed by pollinator species. Mitigation to minimize this effect would include reclaiming the disturbed areas using a BLM-approved native seed mix. Mitigation measures designed to minimize the loss of pollinator habitat are presented in Appendix A (Number 7).

#### *Federally Listed, Proposed, or Candidate Animal Species*

Canada Lynx – The analysis area does not provide quality habitats for Canada lynx or snowshoe hares, and is located outside of a lynx analysis unit; therefore, the proposed action would have **No Effect** on Canada lynx.

Colorado River Endangered Fishes – The primary impact from the proposed project on the four endangered fish (the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub) is development related depletion of water from the Colorado River Basin. Adequate flows are necessary to provide for the various life-stage requirements of these native fishes. In May 1994, BLM prepared a Programmatic Biological Assessment (PBA) that addressed their water-depleting activities in the Colorado River Basin and the effects of these depletions on the endangered Colorado River fish species.

As part of a Programmatic Biological Opinion (PBO) (#ES/GJ-6-CO-94-F-017, issued in 1994) in response to the PBA, the USFWS determined that any depletion of flows in the Colorado River would jeopardize the continued existence of the endangered Colorado River fishes. All water depletions from the Colorado River Basin represent a “**may affect, likely to adversely affect**” determination for individual projects. The Programmatic BO included reasonable and prudent alternatives which allowed BLM to authorize projects with water depletions of less than 125 acre-feet per year. Under William's proposed plan of 58 wells drilled over 4 years, the acre-feet depletion estimate for Colorado River Basin

water would be 11 acre-feet annually for 4 years ( $14.5 \times 0.756 = 10.962$ ), or 44 acre-feet total, based on per well estimates of water use (BLM 2006a).

An amendment to the PBO in 2000 increased the threshold to 3,000 acre-feet per year and excluded depletions associated with oil and gas drilling, based on the assumption at that time that such operations produce more water than they deplete. BLM will soon complete a new PBA addressing the impact of depletions associated with oil and gas development in western Colorado, including the GSFO area. Once the USFWS issues a new PBO—anticipated for summer 2008—the BLM will be responsible for tracking all wells drilled into Federal leases and reporting the corresponding depletions annually to the USFWS. In the meantime, BLM is continuing to operate under the 2000 amendment to the 1994 PBO.

Except for water depletions discussed above, the proposed action would not have direct effects to the endangered Colorado River fish. The primary drainage in the project area is Spruce Creek, which is a tributary to the Colorado River. Sediment delivery to Spruce Creek may increase slightly in the short-term while pads and road are constructed and then decrease over the long-term following interim reclamation. It is not likely, however, that the increase in sediment to the Colorado River would be detectable above current background levels and is not likely to affect the endangered Colorado River fish, which are adapted to naturally high sediment loads.

Mitigation measures outlined Appendix A (Numbers 4-7) and in the Master APD (Williams 2006) would be implemented to minimize impacts to surface waters. All construction activities that might affect waters of the U.S. as defined by Federal regulation would be evaluated to determine applicability of the USACE 404 permitting process. For all construction activities, stormwater controls would be placed to control erosion and sediment and materials runoff, in accordance with BLM requirements and CDPHE stormwater regulations, permits, and plans. New roads would be constructed and existing roads maintained in accordance with the minimum standards for a BLM road, as outlined in BLM Manual 9113, subject to site-specific conditions of approval. Williams would also implement a reclamation and revegetation program for areas of surface disturbance. Pesticides would be managed by licensed applicators under Williams' integrated weed management program and direction of the GSEO *Noxious and Invasive Weed Management Plan for Oil and Gas Operators* (BLM 2007).

Fresh water for use in drilling operations and dust control would be obtained from authorized sources, typically through contractors who have their own legal sources of water.

#### *BLM Sensitive Animal Species*

Potential direct effects that are common to all BLM sensitive terrestrial animal species include mortality, disturbance, or site avoidance/displacement from otherwise suitable habitats if individuals are present in the project area. These impacts could result from increased noise from traffic and equipment operation, collisions with vehicles, use of reserve pits, and overall increased human presence. Direct effects are most likely to occur during the proposed 4-year construction and completion period. There is also the potential for these direct effects to continue during the production and maintenance activities, which may extend up to 35 years.

Potential indirect effects from the proposed surface disturbances that are common to all BLM sensitive terrestrial animal species include habitat loss, habitat fragmentation, or reduction of habitat quality/effectiveness. For habitats that are predominantly herbaceous vegetation, short-term disturbance may extend up to 5 years, which takes into account the 1 to 2-year implementation schedule and three subsequent growing seasons. For habitats that are predominantly shrubland, the timeframe for vegetation recovery may take up to 15 or 20 years under favorable conditions.

Suitable habitats for the Great Basin spadefoot that would be impacted by the proposed action include pinyon-juniper and sagebrush, as well as water sources, both natural and artificial. Suitable habitats for the milk snake that would be impacted by the proposed action include mountain shrubland mixes and pinyon-juniper habitats. Habitat for the midget faded rattlesnake that would be impacted is present in lower elevation xeric sites. Overall, the direct and indirect impacts to BLM sensitive terrestrial species are likely to be minimal.

Bald Eagle – Given the distance to nesting and winter roosting habitat, the project is not expected to impact bald eagles.

Colorado River Cutthroat Trout – The only potential habitat near the project area is the Colorado River. Because this river normally contains large amounts of sediment it is not considered spawning habitat for this species. Therefore, no impacts are expected.

Flannelmouth Sucker, Bluehead Sucker, and Roundtail Chub – The discussion of potential impacts and mitigation measures described above for the endangered Colorado River fishes is also relevant to the three sensitive nongame fishes listed as sensitive by BLM. Because mitigation measures would be implemented, it is not likely that the proposed action would cause sediment loads in nearby streams, including the Colorado River, above current levels.

#### *No Action Alternative*

#### *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*

As with the proposed action, there would be no Harrington's penstemon lost with implementation of the no action alternative; however, indirect impacts to the penstemon would be reduced under the no action alternative because there would be less ground disturbance.

#### *Federally Listed, Proposed, or Candidate Animal Species and BLM Sensitive Animal Species*

Impacts to BLM special status animal species under the no action alternative would be negligible due to the small scale of development.

#### Analysis on the Public Land Health Standard for Special Status Species

The SCMDP area is part of the Rifle-West watershed land health assessment area (BLM 2005). The assessment concluded that Standard 4 was being met for species of concern. Habitat alteration associated with gas development actions in the watershed could result in deteriorated conditions essential for some species of concern over the long-term.

The area where Harrington's penstemon is found has experienced increasing levels of natural gas development in the past few years. Although the disturbances are usually relocated to minimize direct losses, often a portion of the occurrence is impacted by construction activities and potential habitat is lost. Furthermore, indirect impacts associated with the proposed action, like competition from aggressive non-native species, may cause additional impacts to the populations. Standard 4 is presently being met for this species; however the habitat alteration associated with the proposed action would likely contribute to a

declining trend and help to reduce the potential for meeting or maintaining Standard 4 for Harrington's penstemon over the long-term. With the implementation of the mitigation measures identified in this section and elsewhere in the EA, Standard 4 for special status plants and their habitats would be achieved, but populations are at risk due to increasing natural gas development.

The proposed action should not result in a failure of the area to achieve Standard 4 for special status, threatened or endangered species, provided that mitigation measures are implemented for the SCMDP project area. However, the proposed action would facilitate increased natural gas development which would further fragment habitat, reduce habitat connectivity, and reduce habitat patch size within the watershed. When considered with natural gas development that has occurred since the assessment, this Federal action would likely contribute to a declining trend and further reduce the potential for meeting or maintaining Standard 4 for certain special status animal species over the long-term.

Provided that mitigation measures are implemented for the SCMDP project area, it is unlikely 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

BLM Instruction Memoranda numbers WO-93-344 and CO-97-023 require that all National Environmental Policy Act documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of a proposed project. The Glenwood Springs Resource Area, Oil & Gas Leasing and Development, Draft Supplemental Environmental Impact Statement (June 1998), Appendix L, Hazardous Substance Management Plan, contains a comprehensive list of materials that are commonly used for oil and gas projects. It also includes a description of the common industry practices for use of these materials and disposal of the waste products. These practices are dictated by various Federal and State laws and regulations, and the BLM standard lease terms and stipulations which would accompany any authorization resulting from this analysis. The most pertinent of the Federal laws dealing with hazardous materials contamination are as follows:

The Oil Pollution Act (Public Law 101-380, August 18, 1990) prohibits discharge of pollutants into waters of the US, which by definition would include any tributary, including any dry wash that eventually connects with the Colorado River.

The Comprehensive Environmental Response, Compensation, and Liability Act (Public Law 96-510 of 1980) provides for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment. It also provides national, regional, and local contingency plans. Applicable emergency operations plans in place include the National Contingency Plan (40 CFR 300, required by section 105 of CERCLA), the Region VIII Regional Contingency Plan, the Colorado River Sub-Area Contingency Plan (these three are Environmental Protection Agency produced plans), the Mesa County Emergency Operations Plan (developed by the Mesa County Office of Emergency Management), and the BLM Grand Junction Field Office Hazardous Materials Contingency Plan.

The Resource Conservation and Recovery Act (RCRA) (Public Law 94-580, October 21, 1976) regulates the use of hazardous substances and disposal of hazardous wastes. Note: While oil and gas lessees are exempt from RCRA, right-of-way holders are not. RCRA strictly regulates the management and disposal of hazardous wastes.

Emergency response to hazardous materials or petroleum products on BLM lands are handled through the BLM Grand Junction Field Office contingency plan. BLM would have access to regional resources if justified by the nature of an incident.

### Environmental Consequences

#### *Proposed Action*

Possible pollutants that could be released during the construction phase of this project would include: diesel fuel, hydraulic fluid, and lubricants. These materials would be used during construction of the road, pad and pipeline and for refueling and maintaining equipment and vehicles. Potentially harmful substances used in the construction and operation would be kept onsite in limited quantities and trucked to and from the site as required. No hazardous substance, as defined by 40 CFR 355 would be used, produced, stored, transported, or disposed in amounts above threshold quantities.

Surface water or groundwater could be impacted under the proposed action. Pollutants that might be released during the operational phase of the project could include condensate, produced water (if the wells in the area produce water) and glycol (carried to the site and used as antifreeze.) While uncommon, an accident could occur which could result in a release of any of these materials. A release could result in contamination of surface water or soil. Improper casing and cementing procedures could result in the contamination of groundwater resources. In the case of any release, emergency or otherwise, the responsible party would be liable for cleanup and any damages. Depending on the scope of the accident, any of the above referenced contingency plans would be activated to provide emergency response. At a minimum, the BLM Grand Junction Field Office contingency plan would apply.

These laws, regulations, standard lease stipulations, and contingency plans and emergency response resources are expected to adequately mitigate any potential hazardous or solid waste issues associated with the proposed action.

#### *No Action Alternative*

The no action alternative includes the drilling and completion of 11 wells at one well pad (SR 12-9). The development of up to 47 wells and associated access roads and pipelines involving Federal surface and/or Federal mineral estate would not occur. As a result, the amount of hazardous materials, and the possibility of pollutant releases, would be reduced by a comparable amount.

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

#### ***Surface Water***

##### Affected Environment

The project area lies within Lower Colorado River Basin below Rifle 5<sup>th</sup> Code watershed, and covers portions of two 6<sup>th</sup> Code watersheds: The Spruce Creek watershed and an unnamed watershed to the west. The project area encompasses a segment of the perennial Spruce Creek itself and portions of at least four unnamed, ephemeral tributary streams. Approximately two miles north of the northern boundary of the project area, Spruce Creek joins the Colorado River.

According to the *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission [WQCC] Regulation No. 37)(CDPHE 2007), the SCMDP drainages are within Segment 4a, which includes all tributaries to the Colorado River from its confluence with the Roaring Fork River to a

point immediately below its confluence with Parachute Creek. This segment has been classified aquatic life cold 2, recreation 2, water supply, and agriculture. Aquatic life cold 2 indicates that this water course is not capable of sustaining a wide variety of cold or warm water 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. This segment is, however, suitable or intended to become suitable for potable water supplies and agricultural purposes that include irrigation and livestock use.

At this time, no water quality data are available for either Spruce Creek or the unnamed drainages in the SCMDP area.

These drainages are not currently on the State of Colorado's *Stream Classifications and Water Quality Standards* (CDPHE 2007, WQCC Regulation No. 37), the State of Colorado's *303(d) List of Water Quality Limited Segments Requiring TMDLS* (CDPHE 2006a, WQCC Regulation No. 93), or the State of Colorado's *Monitoring and Evaluation List* (CDPHE 2006b, WQCC Regulation No. 94).

### Environmental Consequences

#### *Proposed Action*

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

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. As currently planned, only one proposed well pad is situated less than 250 feet from a perennial or ephemeral drainage; this is the SR 12-9 pad, the southeast end of which is approximately 170 feet from Spruce Creek.

The existing access road to the SCMDP parallels an unnamed ephemeral drainage along most of its length, then crosses Spruce Creek and at least two intermittent tributaries in the southern part of the SCMDP. The access road to the 7-94-S pad also crosses Spruce Creek and an ephemeral tributary.

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 and other preventive 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 the pit would be backfilled 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. This containment would be sufficient to contain 110 percent of the volume of the largest tank on the site. In the event of an accidental release, produced water and condensate would be confined

for cleanup in this containment area and would be prevented from migrating to surrounding soils or surface waters. Pipelines used to transport these liquids would be pressure tested prior to use to detect any leakage.

Refer to Appendix A for standard Conditions of Approval that would mitigate impacts to Surface Water. Through the use of conditions of approval and best management practices associated with construction activities, prompt interim reclamation, and the implementation of preventive measures associated with the treatment and storage of fluids, impacts to surface waters would be minimized and should be minor.

#### *No Action Alternative*

The no action alternative includes the drilling and completion of 11 wells at one well pad (SR 12-9). The development of up to 47 wells and associated access roads and pipelines involving Federal surface and/or Federal mineral estate would not occur. The SR 12-9 pad does not impinge upon any springs or streams, and its access road does not cross any perennial or intermittent streams. As a result, the impacts of the no action alternative on surface waters would be negligible. Under this alternative the voluntary mitigation project would not take place and therefore the vegetation, soil stability and water quality in the vicinity of the springs would likely continue to degrade.

#### ***Waters of the U.S.***

##### Affected Environment

Waters of the United States located in the SCMDP area include ephemeral tributaries to Spruce Creek. Section 404 of the Clean Water Act requires a Department of the Army permit from the USACE prior to discharging dredged or fill material, including temporary discharges, into waters of the U.S. as defined by 33 CFR Part 328.

##### Environmental Consequences

#### *Proposed Action*

The existing access road to the SCMDP parallels an unnamed ephemeral drainage along most of its length, then crosses Spruce Creek and at least two intermittent tributaries in the southern part of the SCMDP. The access road to the 7-94-S pad also crosses Spruce Creek and an ephemeral tributary. These stream crossings would require USACE approval prior to construction.

#### *No Action Alternative*

The no action alternative includes the drilling and completion of 11 wells at one well pad (SR 12-9). The SR 12-9 pad does not impinge upon any jurisdictional streams, and its access road does not cross any perennial or intermittent streams. As a result, the no action alternative would have no impact on USACE jurisdictional waters of the U.S.

#### ***Groundwater***

##### Affected Environment

The proposed activities are located within the Division of Water Resources (DWR) Water Division 5, the Colorado River Basin Main Stem. The groundwater in this division is generally found in both alluvial and sedimentary aquifers.

The project area is in the lower Piceance Basin aquifer system. The Piceance Basin contains both alluvial and bedrock aquifers. Unconsolidated alluvial aquifers are the most productive aquifers in the Piceance Basin. The groundwater exists in shallow, unconsolidated alluvium associated with the Colorado River (BLM 2006) and consists of unconsolidated boulders, cobbles, gravel, sand, silt, and clay. The thickness of the alluvium is variable, but tends to be thinner in the upper reaches and thicker in the lower reaches. Generally, alluvial well depths are less than 200 feet and typically water levels range from 50 to 100 feet. The quality of alluvial groundwater in the Colorado River Basin can vary widely, and is affected by return flow quality, mineral weathering and dissolution, cation-anion exchange with alluvial minerals, and organic compound loading from fertilizer and pesticide leaching.

The most important bedrock aquifers are known as the upper and lower Piceance Basin aquifer systems. These consolidated bedrock aquifers occur within and above the large oil shale reserves. The upper and lower aquifers are separated by the Mahogany Zone of the Parachute Creek Member of the Tertiary Green River Formation. The Mahogany Zone is a poorly permeable oil shale, which effectively serves as an aquitard. Both bedrock aquifers overlie the older Cretaceous Mesaverde Group, the target zone of the subject wells. South of the Colorado River, these upper Tertiary-age aquifers have largely been eroded off, exposing the lower Green River and Wasatch Formations. The surface formation of the proposed pads is Quaternary Landslide Deposits (Q1).

Groundwater is recharged from snowmelt in upland areas that receive more precipitation than lower altitude areas. In the Piceance Basin, recharge flows from areas near the margins of the basin to discharge areas near principal stream valleys. The groundwater moves laterally and/or upward discharging directly into streams, springs, and seeps by upward movement through confining layers and into overlying aquifers or by withdrawal from wells (USGS 2007a). The natural discharge areas generally are found along the Colorado River and its tributaries (USGS 2007b).

The Spruce Creek Master Development Plan (SCMDP) Area encompasses portions of Sections 4 and 9, T7S R94W. Two new well pads are proposed for Section 9, SR 24-9 and SR 33-9, and existing pad Federal S-94-S-04, located in Section 4, would be enlarged to accommodate 14 additional well sites. According to the Colorado Division of Water Resources (DWR), there are no fresh water wells located within Section 9. However, numerous fresh water wells are located in Section 4, of which nine are within a 0.5-mile radius of the proposed activities. Five of the wells are listed as monitoring wells with only four of them defined by quantitative data. Well depths range between 141 and 226 feet with water levels ranging between 80 and 198 feet. Water yields are considered good, showing an average of 15 gallons per minute (gpm). A data check of the fresh water wells located within a 1-mile radius of the proposed activities fall within the same parameters for well depths and water levels. The wells are likely completed in the Wasatch Formation or surface alluvium. The use of the wells is primarily domestic; therefore it can be assumed that the quality of the water is fit for human consumption.

## Environmental Consequences

### *Proposed Action*

Potential impacts to groundwater resources from the proposed action would include contamination of the groundwater with produced water, drilling mud, and petroleum constituents. Hydraulic fracturing (fracing) would be incorporated to complete the wells, which would include produced and freshwater mixed with proppants, or propping agents, to stimulate the formation to create fractures that would allow gas to travel more freely from the rock pores where the gas is trapped. Hydrofracturing would be conducted at 5,000 feet or more below ground surface (bgs), and would be unlikely to cause impacts to groundwater resources near the surface, such as springs or shallow alluvium. However, isolation of any water bearing zones during installation of the production casing would minimize the effects, as well as

cementing the production casing to 200 feet above the top of the Mesaverde Group. It is highly unlikely that any deep groundwater resources would be affected, as the thick impermeable layers of rock at the top of the Williams Fork Formation would prevent water or hydrocarbons from migrating to potable water zones.

#### *No Action Alternative*

Under the no action alternative, drilling and completion of 11 wells at well pad SR 12-9 would be the only Public Land Health Standard for Water Quality

The proposed action and the no action alternative would be unlikely to prevent Standard 5 from being achieved.

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

#### Affected Environment

The existing access road to the SCMDP parallels an unnamed ephemeral drainage along most of its length, then crosses Spruce Creek and at least two intermittent tributaries in the southern part of the SCMDP. The access road to the 7-94-S pad also crosses Spruce Creek and an ephemeral tributary. There are two springs, each with a small area of associated wetland, in the southern portion of the SCMDP. Both are upslope of any proposed activities and would thus not be affected by them.

#### Environmental Consequences

##### *Proposed Action*

None of the stream segments crossed by access roads in the SCMDP have substantial areas of wetland or riparian vegetation associated with them. Thus, proper road construction practices, including culverts sized to accommodate a 25-year storm event and implementation of associated best management practices, would mitigate any impacts on these stream segments.

In addition, the two wetland areas in the southern portion of the SCMDP would require USACE approval prior to any activity that may impinge on them or their water quality. Both of these springs and their associated wetlands are upslope of any proposed road, well pad, or pipeline construction. Thus, their presence would not trigger USACE permitting requirements for any proposed activities.

##### *No Action Alternative*

The SR 12-9 pad, the only pad that would be developed under the no action alternative, does not impinge upon any wetlands or riparian areas, and its access road does not cross any perennial or intermittent streams. As a result, the impacts of the no action alternative on wetlands and riparian areas would be negligible.

Under this alternative the voluntary mitigation project would not take place and therefore the riparian vegetation and water quality in the vicinity of the springs would likely continue to degrade.

#### Analysis on the Public Land Health Standard for Riparian Systems

Standard 2 for Public Land Health states that riparian systems associated with both running and standing water must function properly and have the ability to recover from major disturbance such as fire, severe

grazing, or 100-year floods. The SCMDP lies within the Colorado River Below Rifle Land Health Area. All riparian systems within this area have been found to be achieving or moving towards achieving Standard 2. The proposed action has the potential to increase sediment loads in Spruce Creek and its tributaries within the SCMDP; however, provided that the required mitigation measures are implemented, the proposed actions would not prevent Standard 2 from being met.

**Other Affected Resources**

In addition to the critical elements, the resources presented in Table 10 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.

<b>Table 10. Other Resources Considered in the Analysis</b>			
<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
Rangeland Management			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**

Interstate 70 provides regional access through Garfield County to the SCMDP project area. Primary access would be provided from I-70 at the Rulison exit (Exit 81). Five existing county roads would be used to access the OMDP area: Garfield County Roads (CR) 309, 329, 323, 329 (also called Spring Creek Road), and 350. CR 323 starts at I-70 and links to both CR 309 and CR 320; these two roads run parallel before joining to the north of SCMDP. CR 329 starts at CR 320, and feeds into CR 350 along the western edge of the SCMDP area. The existing SR 12-9 pad is accessed just south of the junction between CR 329 and CR 350; thus, all of the county roads listed above are already supporting oilfield traffic in the SCMDP area. These existing roads are open for public use, and are considered suitable by the county for

use by drilling, construction, and operations traffic. Existing traffic volumes on most of these roads is currently moderate, since they also provide access to other areas of natural gas extraction, such as those described in the Doghead Mountain and Rulison GAP EAs. Traffic on CR 329 and CR 350, however, is currently fairly light; most traffic at the time of this writing is short-term traffic associated with construction of a natural gas pipeline through the area.

Environmental Consequences

*Proposed Action*

To the extent feasible, existing roads would be used to access the proposed well pad facilities. These existing roads currently accommodate drilling traffic, so would not require upgrading or expansion.

The proposed action would result in a substantial increase in truck traffic along these roads; the largest proportional increase would occur on CR 329 and CR 350. The increase would be greatest during rig-up, drilling, and completion activities. Data indicate that approximately 1,160 truck trips over a 30-day period would be required to support the drilling and completion of each well (Table 11).

<b>Table 11. Traffic Associated with Drilling and Completion Activities</b>		
<i>Vehicle Class</i>	<i>Trips per Well</i>	<i>Percentage of Total</i>
16-wheel tractor trailers	88	7.6%
10-wheel trucks	216	18.6%
6-wheel trucks	452	39.0%
Pickup trucks	404	34.8%
<b>Total</b>	<b>1,160</b>	<b>100.0%</b>
Source: BLM 2006. Note: Trips by different vehicle types are not necessarily distributed evenly during the drilling process. Drilling and completion period is approximately 30 days per well.		

Degradation of field development roads may occur due to heavy equipment travel, and fugitive dust and noise would be created, primarily during the drilling and completion phases. Mitigation measures (Appendix A) would be required as conditions of approval to ensure that adequate road maintenance, dust abatement, and noise mitigation occur.

The existing roads would remain open for public use during production; thus, additional potential impacts during the construction/drilling and recompletion/workover phases would include temporary conflicts with normal traffic, including travel delays and increased vehicle collision rates. Included in the COA list (Appendix A) is the requirement that the operator strive to ensure that it and its contractors observe posted and operational speed limits and other road safety measures in order to reduce such conflicts, as well as reduce road wear and fugitive dust emissions.

Once the 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 1-2 times per day to once per week. Each well may be recompleted up to once per year, requiring approximately three to five truck trips per day for approximately seven days.

This project would also involve construction of approximately 4,159 linear feet of new access road. All road construction in the SCMDP area would occur during the first year of exploration. Construction of access roads would occur in a 50-foot wide easement, including a 25-foot running width, although switchbacks and turnouts would be wider. These roads would be constructed to meet the standards of anticipated traffic flow and all-weather requirements. All roads would be surfaced with gravel for the duration of production operations. Additional measures would include, but not be limited to blading, ditching, culvert installation and maintenance, and sloping of roadbeds as necessary to provide well-constructed and safe roads. The vast majority of new access road proposed is on private surface and would not be open for public for safety reasons, and signs and/or gates would be posted indicating private use only.

Maintenance of the roads used to access well locations would continue until final abandonment and reclamation of the well locations, at which point the roads would also be reclaimed in accordance with the COA requirements listed in Appendix A.

The proposed action includes construction of approximately 9,163 linear feet of new pipelines to access well pads and a frac pad. To the extent feasible, these pipelines would be buried alongside the existing 50-foot right-of-way for these county roads and access roads. Because the pipeline areas would be reclaimed, they would not generate any additional long-term disturbance.

Refer to Appendix A for mitigation measures applicable to transportation resources to be included as conditions of approval.

#### *No Action Alternative*

Although the no action alternative involves construction and drilling on the SR 12-9 pad only, this alternative would still make use of all county roads discussed in this section. With proper maintenance and the use of appropriate best management practices and conditions of approval listed in Appendix A; however, the potential impact to roads of the no action alternative would be greatly reduced below the level in the proposed action.

## ***Geology and Minerals***

### Affected Environment

The project area is located within the southern Piceance Basin, a broad elongate structural basin located at the eastern edge of the Colorado Plateau. The basin is highly asymmetrical and deepest along its eastern side near the White River Uplift, where more than 20,000 feet of sedimentary rocks are present. It is bounded on the north by the Uinta Mountain uplift, on the east by the Grand Hogback Monocline, which lies along the west flank of the White River Uplift, on the southeast by the Gunnison and Uncompahgre Uplifts, and separated from the Uinta Basin to the northwest by the Douglas Creek Arch. Surface exposures in the Piceance Basin are primarily sedimentary rocks of the Green River and Wasatch Formations.

Surface deposits that cover most of the project area are mapped as Quaternary Landslide deposits (Q1). Onsite inspection confirmed that surface deposits consisted primarily of unconsolidated basalt cobbles and boulders in a sandy matrix. These type sediments are also referred to as debris fans and range in thickness from 16 to 282 feet and are believed to be sourced from the northern flank of Battlement Mesa, flowing into the Colorado River (Brown, 2007).

The target zone 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 this area is estimated to be approximately 5,000 feet thick. The Mesaverde Group is often called the Mesaverde "Formation" and includes informal subdivisions based on gas productivity characteristics including the barren Ohio Creek, the stacked lenticular, fluvial sandstones, sandy shales, carbonaceous shales and coals of the Williams Fork Formation, and the underlying marine sandstones and shales of the Iles Formation.

The proposed drilling project would target sandstone layers within the Williams Fork (including the Cameo Coal and un-named sandstones) between 5,850 and 8,300 feet TVD, more specifically the Lower Cameo Pay Zone. The Williams Fork Formation sandstones are considered "tight" because of their low permeability reservoir characteristics. Individual sandstones are stacked and concentrated into 400-500 foot thick potentially productive sequences, and distributed throughout a vertical interval of about 3,000 feet. Sand bodies originating from a river or fluvial depositional setting typically demonstrate irregular and spatially limited reservoir distributions. Studies of the Rulison Gas Field show that these Williams Fork sandstones have limited horizontal extent, based on the lack of pressure communication between existing wells spaced less than 1,000 feet apart (Vargas 2006).

### Environmental Consequences

#### *Proposed Action*

Implementation of the proposed action would result in natural gas and associated water being produced from the hydrocarbon-bearing sands within the Mesaverde Group. The amount of natural gas that may be potentially produced from the proposed wells cannot be estimated accurately. However, if the wells become productive, initial production rates would be expected to be highest during the first few years of production, then decline during the remainder of the economic lives of the wells. Natural gas production from the proposed wells would contribute to the draining of hydrocarbon-bearing reservoirs within the Mesaverde Group in this area, an action that would be consistent with BLM objectives for mineral production.

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 would 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.

The specific casing depths would vary depending on well location and drilling conditions. To accommodate protection and isolation of usable water zones, 8 5/8-inch surface casing would be set at anticipated depths between 1,000 and 2,700 TVD, well below the average depth to known aquifers. Cement would be circulated to surface to assure an adequate seal between the pipe and the rock formations. The 4 1/2-inch production casing would be set at total depth of the well and cement volumes would be sufficient to fill the annulus between the rock formations and the exterior of the casing to 200 feet above the top of the Mesaverde. If a water bearing, gas productive, lost circulation or pressured zone is encountered, cement volumes would be adjusted to isolate that zone or zones. This configuration is designed to prevent accidental contamination or leakage of hydrocarbons or fracturing fluids from reaching usable water or other productive zones within the wellbore.

### *No Action Alternative*

Under the no action alternative, the wells accessing federal minerals would not be approved at this time. Impacts to the geology and mineral resources would only occur from those wells proposed for the new SR 12-9 well pad, and would be minimal. Downhole resources should be protected by designed casing programs to protect such resources and are part of accepted drilling scenarios submitted for the wells drilled on that pad.

### *Noise*

#### Affected Environment

The proposed action would lie within a rural setting characterized by fairly recent natural gas development activities. Noise levels in the area are presently created by traffic serving existing wells and ongoing drilling and completion activities. The proposed drilling activities would be located about 0.75 mile from the nearest residences, with the access road lying within a few hundred yards.

#### Environmental Consequences

##### *Proposed Action*

The project would result in increased levels of noise during the construction, drilling, and completion phases. The noise would be most noticeable along the roads used to haul equipment and at the pad locations. Drilling activities are subject to noise abatement procedures as defined in the Colorado Oil and Gas Conservation Commission (COGCC) Rules and Regulations (Aesthetic & Noise Control Regulations). The COGCC regulations generally require a limit of 80 decibels db(A) during the day and 75 db(A) during the night, measured at a distance of 350 feet. Operations subject to the maximum permissible noise levels for industrial zones include those involving pipeline or gas facility installation or maintenance; the use of a drilling rig, completion rig, workover rig; or stimulation (fracing).

Short-term (7 to 14 day) increases in noise levels would characterize 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 (Table 12), construction noise at a distance of 1,000 feet would equal approximately 59 dB(A), which would approximate levels in 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 62 dB(A) at 1000 feet. This level of noise approximates that associated with light industrial activities (EPA 1974). These increased noise levels would be in addition to levels of noise that are already above background levels due to current oil and gas developments in the area.

Traffic noise levels would also be elevated as a consequence of the proposed action. The greatest increase would be along access roads and Spring Creek Road (CR 329) during the drilling and completion phases. Based on the La Plata County data presented in Table 13, 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. Duration of increased noise would be short but occur repeatedly during drilling and completion phases.

Noise impacts would decrease greatly during the production phase but remain above background noise levels. During maintenance and workovers, noise levels would increase above those associated with

routine well production. Traffic noise level would temporarily impact residences located along county roads that would provide primary access into the area. While exposure to these noise levels is not likely to be harmful, it is likely to be annoying to residents.

<i>Equipment</i>	<i>Noise Level (dB(A))</i>		
	<i>50 feet</i>	<i>500 feet</i>	<i>1,000 feet</i>
Tractor	80	60	54
Bulldozer	89	69	63
Backhoe	85	65	59
Crane	88	68	62
Air Compressor	82	62	56
Dump Truck	88	68	62
<b>Average (rounded to nearest whole dB(A))</b>	<b>85</b>	<b>65</b>	<b>59</b>
Source: BLM 1999b			

<i>Equipment Type</i>	<i>Noise Level at 50 feet</i>	<i>Noise Level at 500 feet</i>	<i>Noise Level at 1,000 feet</i>	<i>Noise Level at 2,000 feet</i>
Crane	88	68	62	56
Backhoe	85	65	59	53
Pan Loader	87	67	61	55
Bulldozer	89	69	63	57
Fuel and Lubrication Truck	88	68	62	56
Water Truck	88	68	62	56
Motor Grader	85	65	59	53
Vibrator/Roller	80	60	54	48
Mechanic Truck	88	68	62	56
Flat Bed Truck	88	68	62	56
Dump Truck	88	68	62	56
Flat Bed Trailer	88	68	62	56
Tractor	80	60	54	48
Concrete Truck	86	66	60	54
Concrete Pump	82	62	56	50
Front End Loader	83	63	57	51
Road Scraper	87	67	61	55
Air Compressor	82	62	56	50
Average Construction Site	85	65	59	53
Source: La Plata County (2002)				

## *No Action Alternative*

The no action alternative involves construction and drilling on the SR 12-9 pad only. While this alternative would still make use of all county roads discussed in this section, vehicle traffic would be greatly reduced relative to the level in the proposed action. Adoption of the noise abatement condition of approval (Appendix A, Number 20) would help to further reduced noise levels.

## ***Paleontology***

### Affected Environment

The predominant surface formation present within the boundary of the SCMDP is Quaternary Landslide Deposits (Q1). The Wasatch Formation, which lies unconformably on top of the Mesaverde Group, is the formation of interest regarding fossil potential within the Rulison Field. Most likely Wasatch Formation sediments are draped by the Landslide deposits and debris fans, and may be encountered during excavation of the pads and access roads, but there is no certainty regarding the thickness of the landslide debris. Wasatch Formation sediments are found to the east and west of the proposed pad locations, with the closest occurring in Section 10, T7S, R94W.

The Wasatch Formation is a BLM Class 5 formation, defined as highly fossiliferous geologic unit that consistently and predictably produces vertebrate fossils or scientifically significant invertebrate fossils, and are at risk to human-caused adverse impacts or natural degradation. The Wasatch Formation is divided into the early Eocene Shire, and the Paleocene age Molina and Atwell Gulch Members. All members of the Wasatch Formation contain vertebrate fossils in varying abundances (Murphy and Daitch 2007). Rocks of the Wasatch Formation are lithologically very similar to one another throughout the Piceance Creek Basin as heterogeneous continental fluvial deposits with interfingering channel sandstone beds and overbank deposits consisting of variegated claystone, mudstone, and siltstone beds (Franczyk et al. 1990).

Fossils historically identified in the Wasatch are archaic mammals—including marsupials, representatives of two extinct orders of early mammals (pantodonts and creodonts), artiodactyls (deer-like, even-toed ungulates), ancestral horses and other perissodactyls (odd-toed ungulates), carnivores, and primates—as well as birds, lizards, turtles, crocodilians, gars and other fishes, freshwater clams, gastropods (snails), and other invertebrates (BLM, 1999a) .

### Environmental Consequences

Construction activities have the potential to adversely affect scientifically important fossils. The greatest potential for impacts is associated with excavation of surficial materials and shallow bedrock. In general, alluvium and colluvium are much less likely to contain well preserved plant and animal remains than intact native sediments. An examination of the BLM paleontology database indicates that there are no known fossil sites found within the SCMDP study boundary. Onsite inspections of SR 12-9, SR 24-9, and SR 33-9 confirmed the surface formation is accurate as mapped. Surface vegetation was high elevation scrub oak, serviceberry, and sagebrush; juniper and pinyon trees were also noted. Ground surface on all of the proposed locations was obscured with heavy vegetation and littered with unconsolidated landslide detritus and numerous rounded vesicular boulders of basalt. Areas covered with thick vegetation and soil cover do not usually yield fossil resources and in addition, no bedrock outcrops were noted at any of the proposed locations. The closest known fossil discovery sites are found in Section 29 T6SR95W, over 2.5 miles to the northwest of the existing Federal S-94-S-04 well pad. Although unlikely, in the event that paleontological resources are encountered during the excavation and

construction processes, a standard paleontological condition of approval would be attached to the APDs. (Appendix A, Number 13).

*No Action Alternative*

The SR 12-9 pad, the only pad that would be developed under the no action alternative, would not impact any known paleontological resources.

***Range Management***

Affected Environment

All well pads are proposed in the Spruce Gulch Common Allotment # 08121. The grazing allotment is comprised of both private and federal acres. There are currently two grazing permittees authorized on the allotment. The grazing permits are small farm operations. Both permittees have cow and calf operations and are highly dependent on the forage resources in the allotment as spring, summer, and fall range. Permitted grazing use is summarized in Table 14.

<b>Table 14. Grazing Permittees in the Spruce Gulch Common Allotment</b>				
<b>Permittee</b>	<b>Livestock Type and Number</b>	<b>Period of Use</b>	<b>Percent Public Land</b>	<b>AUMs<sup>1</sup></b>
Joan Savage	Cattle – 196	05/16 to 06/30	38	113
	Cattle – 25	10/01 to 10/30	38	9
Arnold and Elsie Mackley	Cattle – 14	05/15 to 09/30	80	51
<sup>1</sup> Animal Unit Months (AUMs) are defined as the amount of forage needed by an animal unit (AU) grazing for one month. An AU is defined as one mature 1,000 pound cow and her suckling calf.				

Environmental Consequences

*Proposed Action*

Possible effects from oil and gas development on livestock grazing include loss of forage, increased human activity, spread of noxious weeds, and livestock mortality as a result of falling into pits or collisions with project vehicles. Short-term loss of vegetation would occur as a result of surface-disturbing activities associated with the construction of well pads and access roads. There would be a long term loss of forage in disturbed areas needed for maintenance of gas production over the life of the proposed wells.

Rehabilitation of the short-term disturbance areas would replace some of the livestock forage. It usually takes about 3 years for grasses and forbs to recover lost productivity following site rehabilitation in this area. Production of grasses and forbs on successfully rehabilitated sites is often greater than on those sites prior to disturbance, which would mitigate some of the initial loss of forage. Since development of the SCMDP would take place over time, the reduction in available livestock forage at any one time would be less than the total reduction in forage if the Proposed Action were to be implemented all at once. Road surfaces, well sites, production facilities, and other building locations would be unavailable for livestock grazing in the long term.

Development and maintenance of oil and gas facilities would increase human activity in the SCMDP. An increase in human activity related to development and maintenance of the Proposed Action would cause cattle to move away from locations where the activity is taking place. The negative impact that an increase in human activity would have on grazing livestock would be expected to be minor. Livestock grazing may also benefit from improved access. New roads and pipelines would open access to areas of the allotment that are difficult to get to now because of thick brush and steep slopes. Improvement in livestock distribution would improve forage utilization throughout the allotment.

Effects from increased human activity also could include the introduction and spread of noxious weeds and the subsequent degradation of rangeland health. Section 1.3 of this EA describes in detail the effects of invasive species and lists mitigation measures related to the Proposed Action.

The USFWS has documented numerous problems related to contaminants in oil field waste pits. In Wyoming, the USFWS has found deer, pronghorn, waterfowl, songbirds, and rabbits in oil pits. Even if animals are not killed in the pits, the oil and chemicals in the pits may affect their health. For example, if animals absorb or ingest oil, they may become more susceptible to disease and predation (USFWS 2000). This problem is not unique to wildlife, as many ranchers have reported dead livestock near pits. Ranchers in New Mexico have reported losing eight to ten cows each year because of oil field activity (COM 2006). Mitigation measures implemented by Williams, and recommended by the FWS should minimize the potential for livestock mortality. It is not anticipated that the level of impacts from implementation of the Proposed Action would require adjustment of the livestock stocking rate. The level of forage utilization would be monitored on the allotment and, if necessary, adjustments in livestock use would be made to protect land health based on this monitoring. Appendix A (Number 13) presents conditions of approval related to mitigating the effects of the proposed action on range management resources.

#### *No Action Alternative*

Under the no action alternative, there would be no additional loss of forage due to pad, pipeline, and road construction activities associated with Federal wells. There would no increase in traffic on existing roads, livestock disturbances and mortality rates would not increase, and the introduction and spread of noxious weeds would be lower than what would be expected under the proposed action. In addition, construction of roads and pads would not occur, therefore, new areas opened up to possible livestock grazing due to the removal of dense brush would not take place. Under the no action alternative, the mitigation measures would not take place and the improvements to water sources for livestock would not occur.

#### ***Realty Authorizations***

##### Affected Environment

Williams must apply for and be granted right-of-way (ROW) authorizations for routes that are outside of their Federal lease holdings. Proposed routes for which ROW authorizations would be required are indicated in Figure 3. In addition, any fee wells drilled from federal surface locations would also require ROW authorizations.

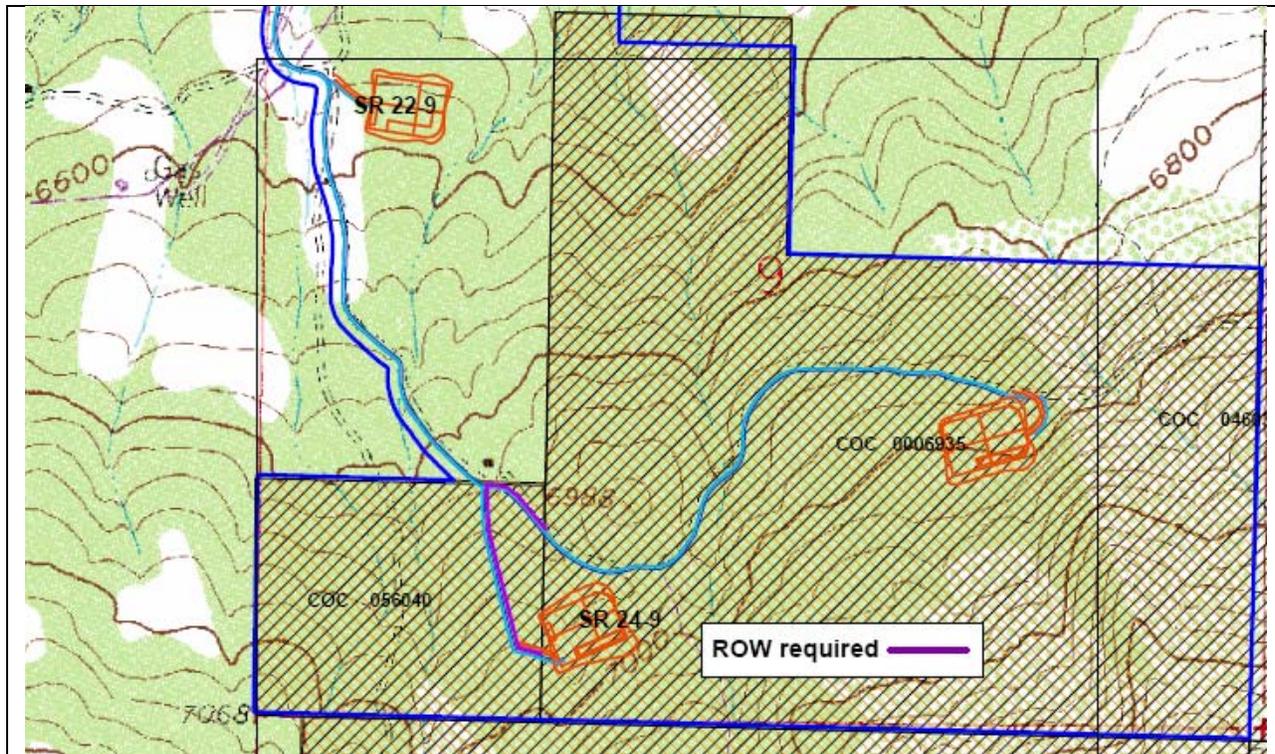
##### Environmental Consequences

#### *Proposed Action*

Under the proposed action, the ROW authorizations shown in Figure 3 would be granted subject to appropriate terms and conditions. These authorizations would provide Williams legal access for construction and use of proposed and existing routes. In addition, Williams would have legal access for

the construction and development of proposed pads SR 24-9 and SR 33-9. Standard reclamation measures (Appendix A, Number 7) would be required for these ROW authorizations.

**Figure 3. Rights-of-Way Required under the Proposed Action**



*No Action Alternative*

No realty authorizations would be required to develop the no action alternative.

***Recreation***

Affected Environment

Recreation Management – The Project Area is within an Extensive Recreation Management Area (ERMA). Within ERMAs recreation management is custodial in nature. Custodial recreation management is different from the structured recreation management within Special Recreation Management Areas (SRMAs). Custodial recreation management does not target specific recreation opportunities or beneficial outcomes. ERMAs also do not have prescriptions to maintain specific physical, social, or administrative recreation setting characteristics.

BLM’s general recreation management responsibility in ERMAs is to address: 1) dispersed recreation activities, 2) visitor safety, 3) use and user conflicts, and 4) resource protection issues. Specific management direction for the Glenwood Springs 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” (RMP, BLM 1984)

Recreation Setting Character – For recreation planning and management, possible mixes of activities, settings and probable recreation experience opportunities have been arranged in a continuum called the Recreation Opportunity Spectrum (ROS). The ROS is divided into six classes: Primitive, Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roded Natural, Rural and Urban. An inventory of the Resource Area was conducted by the BLM for the 1984. Resource Management Plan (RMP). The ROS in the GSFO RMP was used descriptively to portray settings and opportunities. It was not set to prescriptively manage recreation settings to produce explicit recreation opportunities.

The SCMDP area is located within the Semi-Primitive Motorized ROS class. The Semi-Primitive Motorized class is characterized by a predominately unmodified natural environment of moderate to large size that provide: 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.

Existing Recreation Activities – The principal types of recreation uses (hunting and OHV driving/riding) within the Project Area have not changed substantially since the 1984 RMP was completed. The Project Area is located within a combination of private property and public lands administered by the BLM. The private lands limit vehicle access and overall use. Recreation use figures are not collected for the SCMDP area. Field observations indicate that recreational use is low except during the fall big game hunting seasons which begin in late August and continue through November.

Recreation Facilities – No developed recreational facilities are present within the SCMDP area such as campgrounds, picnic areas or maintained hiking/biking trails. Several unmaintained dirt roads and trails (including one trailhead just east of SR 24-9) provide recreation opportunities for off-highway vehicle driving/riding in the Project Area.

Commercial Recreational Use – One commercial outfitter, Cache Creek Outfitters, has a special recreation use areas that include the Project Area. Cache Creek Outfitters use the lower elevation parcels of public lands in conjunction with their White River Forest Service Special Use Permit. Cache Creek Outfitters has 884 service days for summer use and fall big game hunting.

## Environmental Consequences

### *Proposed Action*

Recreation Setting Character – Over the project's 20- to 30-year operating life, the development of natural gas wells, the auxiliary production facilities, and presence of workers would directly alter the physical, social, and administrative character of the recreation settings. The ROS class can be expected to change from Semi-Primitive Motorized (SPM) class to at least the Roded-Natural (RN) class. The RN class is described as having: 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 may be important, 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 should harmonize with the natural environment.

The long-term change from an SPN to an RN setting would be consistent with the GSFO RMP priorities for recreation management within ERMA because, as part of the ERMA, the Project Area does not have recreation setting prescriptions or targeted beneficial outcomes. However, changes in the physical, social,

and administrative characteristics of the recreation setting would impact traditional users who enjoy participating in dispersed recreation activities in Semi-Primitive Motorized recreation settings. Implementation of measures to mitigate impacts to visual resources (see Visual Resources section) would indirectly help mitigate impacts to naturalness.

*Recreation Activities* – Construction and well-drilling activities would likely displace big game to other locations outside of the Project Area. The result would be an indirect impact to big game hunters. Traditional recreation activity participants, especially big game hunters, would be replaced by recreational users seeking activities opportunities produced by RN recreation settings. The experience of users of the trailhead adjacent to SR 24-9 would be negatively affected due to the presence of machinery, noise and dust during the duration of drilling and completing wells from that location.

*Commercial Recreation Use* – The direct and indirect consequences on recreation opportunities for the clients of the commercial permittees parallel those of the non-guided public land user.

#### *No Action Alternative*

Under the no action alternative, the number of well pads constructed would be reduced from four to one and drilling and completion activities would not be as extensive (wells drilled would be reduced from 58 to 11). Therefore, the impacts to recreational opportunities, especially on BLM-managed lands, would be reduced.

### ***Socio-Economics***

#### Affected Environment

The project area is located within Garfield County, Colorado. The population of Garfield County has grown by approximately 2.7 percent per year from 2000 to 2005, resulting in an increase from 44,000 to 51,000 residents (DOLA 2007). Population growth in Garfield County is expected to more than double over the next 20 years from over 50,000 in 2005 to 116,000 in 2025 (DOLA 2007).

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 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.

#### Environmental Consequences

##### *Proposed Action*

The proposed action would result in a minor positive impact on the economy of Garfield County through increases in tax and royalty revenues. Additional job opportunities might also be created and supporting trades and services would benefit to a minor extent.

The proposed action could result in negative social impacts including: 1) reducing scenic quality (see **Visual Resources**), 2) increased dust levels especially during construction (see **Air Quality**), and 3) increasing traffic (see **Access and Transportation**).

#### *No Action Alternative*

Under the no action alternative, the permits for federal wells would be denied. The wells, access road, and pipelines associated with private surface (SR 12-9) would likely be built. Therefore, the potential impact to the economy would be much less. The negative social impacts, including 1) reduced scenic quality (see Visual Resources), 2) increased dust levels, and 3) increased traffic, would be greatly reduced under this alternative.

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

#### Affected Environment

According to the *Soil Survey of Rifle Area, Colorado* (USDA 1985), the proposed activities would be located entirely on the Morval-Tridell and Villa Grove-Zoltay soil complexes. These are both brown loams; permeability is moderately slow to moderately rapid, and erosion hazard is slight to moderate. The existing surface slope is less than 30% beneath all existing and proposed roads and pads, with the exception of the southeast portion of the SR 33-9 pad.

#### Environmental Consequences

##### *Proposed Action*

Total disturbance associated with this project would be approximately 30.9 acres; long-term disturbance would be reduced to approximately 15.9 acres, as shown in Table 3. Most of this would be caused by construction of well pads; the access roads and adjacent drainage ditches would create only about 4.8 acres of new disturbance, which would be reduced by half following the drilling and completion phases of all wells in the SCMDP area. Since proposed pipelines would be collocated with existing county and wellpad access roads along most of their length, total short-term disturbance associated with pipeline construction is expected to be only about two acres (Table 3), all of which would be reclaimed following pipeline construction and would not result in additional long-term disturbance.

In general, the SCMDP area contains adequate vegetation buffers, moderately well-drained soils, and gentle slopes; together, these should minimize the potential for sediment transport. However, during the interval between completion of construction activities and the reestablishment of vegetation, there would be a slight increase in soil loss, loss of soil productivity, and sediment available for transport to surface waters downstream. The greatest risk would occur when exposed soil is mobilized during precipitation events and other periods of runoff. These risks would be largely mitigated through implementation of the applicable standard and site-specific conditions of approval found in Appendix A. 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.

Those soils with severe to very severe erosion hazard and occurring on slopes in excess of 30% are considered to be “fragile soils.” Such soils generally require oil and gas operators to follow special

operating constraints in order to maintain soil productivity, prevent accelerated soil erosion, and protect water quality and quantity. Since no soils with severe to very severe erosion hazard would be impacted by this project, and only a very small area with greater than 30% slope would be impacted, stipulations regarding fragile soils are not necessary for this project. However, additional care should be taken when constructing the cut slope of pad SR 33-9 to ensure that it does not generate rilling, gullyng, or slope failure.

#### *No Action Alternative*

Although the no action alternative involves construction and drilling on the SR 12-9 pad only, this alternative would still make use of all county roads discussed in this section. The potential impact to soils, however, would probably be reduced below the level in the proposed action.

#### Analysis of the Public Land Health Standard for Upland Soils

Standard 1 for Public Land Health requires that upland soils retain adequate infiltration and permeability levels. This requires operators to prevent the creation of rills and gullies, and maintain appropriate ground cover where possible. The SCMDP area lies within the Colorado River Below Rifle (Rifle West) Land Health Area (BLM, 2005). All drainages within this area are considered to be achieving, or moving toward achieving, Standard 1. In particular, no areas within the Spruce Gulch drainage have been identified as experiencing accelerated soil erosion. Careful application of relevant conditions of approval listed in Appendix A, as appropriate, should ensure that Standard 1 is met for this project.

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

##### Affected Environment

The primary vegetation types in the SCMDP include pinyon-juniper (*Pinus edulis- Juniperus osteosperma*) woodland, mountain big sagebrush (*Artemisia tridentata*) shrubland and Gambel oak (*Quercus gambelii*)-mixed montane shrublands.

Pinyon-Juniper Woodland – Pinyon-juniper woodlands in the SCMDP 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 bitterbrush (*Purshia tridentata*), snakeweed (*Gutierrezia sarothrae*), skunkbrush (*Rhus trilobata*), 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 (*Achnatherum hymenoides*), and squirreltail (*Elymus elymoides*). Forbs are a minor component.

Gambel Oak-Mixed Montane Shrubland – This vegetation type is found at higher elevations in the SCMDP than pinyon-juniper woodlands. The vegetation is typically dominated by Gambel oak (*Quercus gambelii*) alone or codominant with serviceberry, mountain big sagebrush (*A. t. var. pauciflora*), mountain mahogany (*Cercocarpus montanus*), chokecherry (*Prunus virginiana*), and snowberry (*Symphoricarpos rotundifolius*) with numerous forbs such as tailcup lupine (*Lupinus caudatus*), dusty and Harrington’s penstemon (*Penstemon comarrhenus, P. harringtonii*), Watson’s penstemon (*Penstemon watsonii*), aspen daisy (*Erigeron speciosus*), running fleabane (*Erigeron flagellaris*), Drummond’s rockcress (*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.

*Mountain Big Sagebrush Shrubland* – These shrublands are composed primarily of mountain big sagebrush with less dominant shrubs like Wyoming big sagebrush (*A .t. subsp. wyomingensis*), bitterbrush, snowberry, and green rabbitbrush (*Chrysothamnus viscidiflorus*). Mountain big sagebrush shrublands typically occur where the pinyon-juniper and Gambel oak-mixed montane shrublands intergrade. There is usually a dense herbaceous component consisting of grasses and forbs. Common graminoid species include Indian ricegrass, squirreltail, western wheatgrass, junegrass (*Koeleria macrantha*), slender wheatgrass (*Elymus trachycaulus*), and muttongrass (*Poa fendleriana*). Common forbs include tapertip onion (*Allium acuminatum*), running fleabane, mariposa lily (*Calochortus nuttallii*), lobe-leaf groundsel (*Packera multilobata*), tailcup lupine, death camas (*Toxicoscordion venenosum*), coppermallow (*Sphaeralcea coccinea*), balsamroot (*Balsamorhiza sagittata*), and Indian paintbrush (*Castilleja sp.*). Brittle prickly pear (*Opuntia fragilis*), a cactus, is also common.

## Environmental Consequences

### *Proposed Action*

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 short-term loss of approximately 30.9 acres of vegetation. Of the 30.9 acres of physical disturbance, approximately 15.88 acres would not be reclaimed during the life of the wells. With implementation of standard conditions of approval (Appendix A, Number 7), 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.

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. This would result in an increase in the proportion of herbaceous (i.e., non-woody) species in the areas of disturbance. The success or failure of revegetation would affect other resources including soils, surface water quality, wildlife, visual resources, and livestock grazing.

### *No Action Alternative*

Under the no action alternative, none of the proposed ground disturbance on BLM land would occur; therefore, no direct impacts to vegetation would occur on BLM lands under the proposed action. Vegetation on private lands would still be impacted because the SR 12-9 pad would likely be constructed.

Additionally, under this alternative the voluntary mitigation project would not take place and therefore the riparian vegetation in the vicinity of the springs would likely continue to degrade.

## Analysis on the Public Land Health Standard for Plant and Animal Communities (partial, see also **Wildlife, Aquatic and Wildlife, Terrestrial**)

This area was meeting the standard, although problems were noted: decadent stands of sagebrush with poor recruitment, 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 A includes provisions to revegetate the disturbances with native species and to control noxious weeds. If successfully revegetated, the proposed action should not contribute to the failure of the area to meet Standard 3.

The no action alternative would have no bearing on the ability of the area to meet the public land health standard for plant and animal communities because no new development would occur on BLM land.

## ***Visual Resources***

### Affected Environment

The proposed pads, pipelines, and access roads are located on a combination of private and BLM-managed federal lands within an area classified as Visual Resource Management (VRM) Class IV (BLM 1984). The objective of Class IV is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, repeating the basic elements, and best management practices.

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 private lands are an indication of the visual values for those lands, but those values are only protected by landowner discretion. Current landscape character is best described as rural plateaus and canyons that are fragmented by roads, pipelines, and well pads. The dominant vegetation type throughout the proposed project is primarily pinyon/juniper and mountain shrub communities.

The protection of VRM classes, landscape character, and scenic quality on private and public lands and split estate is discussed in the FSEIS (BLM 1999:3-41 to 3-45). The impacts of development are also described (BLM 1999:4-49-54). The proposed action would not directly impact any of the key viewing areas or viewsheds described in the FSEIS, although the SCMDP area lies within background viewing area of the I-70 corridor and the nearby viewing area for users of a trailhead east of the SR 24-9 pad. Portions of the new access road would be seen from I-70.

### Environmental Consequences

#### *Proposed Action*

The construction of the proposed project would create contrast within the landscape by removing the existing vegetation, exposing bare ground, and creating a distinct line within the landscape. The access road across private land from the Spruce Creek road to the existing Federal 7-94-S would produce the greatest visual contrasts to color, line, form, and texture. Interim reclamation of the well pad as well as seeding of the cut of fill slopes along the access road with shrub and grass species would reduce some of the contrast, but would need two or three growing seasons to become established.

Additional reductions in contrast would be realized by painting production facilities the non-reflective natural color Juniper Green and implementing Best Management Practices like roughening the slope, undulating the edge of the cut and fill slopes and maintaining upright woody vegetation along the toe of the fill slopes, where possible. With these mitigation measures, long-term visual impacts would be reduced and the proposal would meet VRM Class IV objectives (Appendix A, Number 13)

### *No Action Alternative*

Under the no action alternative, one existing pad and access road would be constructed on private land. Additional contrasts within the existing landscape on BLM-managed federal land would not occur and VRM Class IV objectives would be maintained.

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

#### Affected Environment

Spruce Creek is the primary habitat for aquatic wildlife in the SCMDP area, although various springs and seeps capable of supporting aquatic wildlife also occur. Spruce Creek is ephemeral and does not support fish species. The Colorado River, approximately 1.5 miles north of the SCMDP area, supports numerous native and non-native fish species and a variety of aquatic macroinvertebrates.

#### Environmental Consequences

##### *Proposed Action*

Impacts to aquatic wildlife in Spruce Creek are not expected given the ephemeral nature of the stream. The Colorado River may experience a localized increase in sediment during extreme precipitation events. The small increase in sediment anticipated to ultimately reach the Colorado River due to this project should have minimal impact on aquatic wildlife because it would likely be within normal background levels.

The mitigation project that would exclude livestock from a spring and pond as well as approximately 50 meters of stream would improve habitat for aquatic wildlife and promote species diversity. Additionally, the creation of a small fenced pond on Williams' property adjacent to BLM-managed land would create new habitat for aquatic wildlife.

##### *No Action Alternative*

The impact to aquatic wildlife from the no action alternative would be negligible, given the scale of development and required use of best management practices and conditions of approval (see Special Status Species section). No new aquatic wildlife habitat would be created and no improvements to existing habitat would occur under this alternative.

#### Analysis on the Public Land Health Standard 3 for Plant and Animal Communities (partial, see also **Vegetation and Wildlife, Terrestrial**)

The Rifle-West watershed land health assessment (BLM 2005) determined that Standard 3 was being achieved, although the Spruce Gulch Common allotments were identified as problem areas. Spruce Creek does not currently support fisheries and due to its ephemeral nature, has 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 of Public Land Health Standard 3)***

### Affected Environment

Numerous terrestrial wildlife species are present in the SCMDP area. The SCMDP area is located in mapped big game winter range that has been identified as high value habitat (CDOW 2006). The proposed project lies entirely within winter range for elk. All but 30 acres of the SCMDP area are considered winter range for mule deer.

Mule deer and elk numbers vary naturally due to a variety of environmental and biological factors, and in response to hunting pressure. As a result, populations have varied dramatically over the past several decades. Mule deer numbers were substantially higher in the early 1960s and have since declined. Elk numbers within the landscape area have varied in response to winter die-offs, and appear to be increasing. Past use coupled with ongoing current use of limited winter range habitats by both species may at least in part account for the less than desirable range conditions (browse species condition) found in some areas. Mule deer and elk concentration on winter range and repeated heavy use of browse species can reduce plant vigor and productivity over time.

### Environmental Consequences

#### *Proposed Action*

The proposed action is estimated to result in the direct loss of 30.9 acres of wildlife habitat due to construction of new well pads, access roads, and pipelines. Reclamation of pipelines and temporary disturbances associated with road construction and interim reclamation of well pads would reduce this total to approximately 16 acres once wells are in production. Reclamation activities would benefit some wildlife species by increasing herbaceous forage. In areas where shrubs and trees would be disturbed, impacts to wildlife from loss of thermal and/or hiding cover would be long-term, lasting the 20 to 30+ years following reclamation that it would take for these woody species to re-establish.

A larger area would be subject to indirect habitat loss as a result of disturbance. Human activity, including vehicular traffic and the operation of heavy equipment, can cause deer, elk, and other terrestrial wildlife species to avoid areas of otherwise suitable habitat. Even when wildlife which are sensitive to disturbance do not avoid an area altogether, the changes in their movement patterns can result in greater use of less suitable habitats and increased physiological stress. These impacts are more significant during critical seasons such as winter, when cold temperatures, reduced forage quality, and reduced forage availability due to snow cover deplete their energy stores accumulated during summer and fall.

Another impact of indirect habitat loss can occur in winter range that supports both deer and elk. Although these species compete to some extent for the same foods, particularly during winter, elk are generally able to tolerate colder temperatures and deeper snow cover. If disturbance from human activity and infrastructure affects the distribution of elk and causes them to congregate into smaller areas, the elk can out-compete deer for food and cause them to shift their patterns of use even farther.

Federal lease COC46030 is the only lease with a Timing Limitation (TL) stipulation for the protection of seasonally important wildlife habitats (big game winter range). The TL precludes construction, drilling, or completion activities from January 15 through April 30. The only pad affected by this TL is the federal 7-94-S pad in the northeast portion of the SCMDP area. The 12-9 pad does not contain a TL lease stipulation but is subject to a 60-day TL from January 1- March 1 as a Condition of Approval (COA)

(Appendix A, Number 9). The remaining two pads (24-9 and 33-9) would be subject to a 5-month TL as a result of terms and conditions associated with the issuance of a new right-of-way for access to Section 9 (see site-specific conditions of approval in Appendix A). The TL would be effective from December 1 through April 30 annually and would prohibit use of the access road for construction, drilling, and completion activities at the two pad locations.

Compliance with the TL lease stipulations and conditions of approval would reduce potential indirect impacts by precluding development during the critical wintering season. 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). The TL would not apply to routine production and maintenance activities. Under certain conditions, exceptions to the TL stipulations could be granted at the discretion of the authorized officer, upon consultation with the Colorado Division of Wildlife (CDOW).

Other aspects of the proposed action, including best management practices and mitigation measures to which Williams has committed, would also tend to reduce the severity of adverse impacts to big game ungulates. These include the following:

Williams has designed the development using directional drilling from multi-well pads to reduce the amount of surface disturbance in relation to the number and spacing of downhole targets. As a result, the surface density of pads would be approximately 3.8 pads per square mile. The current land use plan for the GSFO specifies a density of less than 4.0 pads per square mile as a management goal.

Historically, operators relied on truck traffic to haul water produced with the natural gas. Increasingly, operators are using pipelines to move this water to reduce both the costs and the impacts associated with trucking water. Williams has committed to installing buried lines to collect and convey produced water to centralized collection facilities. Use of pipelines instead of trucks to haul produced water is expected to reduce truck traffic—and associated disturbance—by thousands of trips per year.

Williams has committed to use radio telemetry to the extent practicable to reduce truck traffic and human activity associated with routine monitoring and inspection of the production facilities.

#### Threshold Analysis for Mitigation of Impacts to Wildlife and Wildlife Habitat

For the GSFO, the current land use plan (USDI 1999b) 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 (BLM 1999a).”

The GSFO road and well density threshold analysis completed for the proposed and existing developments within the boundaries of the 691 acre SCMDP show a total of four (one existing and three proposed) well pads within the SCMDP, for a total of one pad per 172.75 acres (3.8 pads per 640 acres). Currently, 5.7 miles of roads exist within the SCMDP and 0.8 mile of new road is proposed, totaling 6.5 miles of roads. This yields a road density of 6 miles of road per 640 acres. Therefore, the well density is below the threshold and the road density exceeds the threshold.

Consequently, the current GSFO land use plan has identified a mitigation calculation methodology (BLM 1999b). This methodology consists of working with the operator and CDOW to identify mitigation

equivalent to 24 acres per pad. There are three new pads under the proposed action which require 75 acres of mitigation for indirect impacts. An additional 15 acres of long-term direct impacts brings the total to 90 acres of mitigation.

Williams has committed to a number of habitat improvement projects for terrestrial wildlife in order to fulfill their obligation to mitigate direct and indirect impacts (see Mitigation, above). These projects would benefit terrestrial wildlife by providing new sources of water and improving existing sources of water. Wetland habitat would increase and improve through the exclusion of livestock and increased number of ponds. New water developments would likely attract wildlife to areas previously underutilized, thereby increasing the amount of functional habitat.

#### *No Action Alternative*

The no action alternative includes the drilling and completion of 11 wells at one well pad (SR 12-9). The development of up to 47 wells and associated access roads and pipelines involving Federal surface and/or Federal mineral estate would not occur. As a result, potential impacts to terrestrial wildlife and their habitat would be less than that of the proposed action. Noise and human activity during pad construction, well development, and workovers would provide the majority of potential impacts. These would be localized, short-term events that are not expected to have a negative impact on terrestrial wildlife populations.

#### Analysis on the Public Land Health Standard for Plant and Animal Communities (partial, see also Vegetation and Wildlife, Aquatic)

The Rifle West Land Health Assessment (BLM 2005) determined that Standard 3 was being met with regard to habitat condition related to vegetation structure and species composition. However, the assessment found that 38,373 acres of land within this watershed are not meeting Standard 3 for some wildlife species, most notably mule deer. Of this acreage, 12,549 acres are located on BLM land. The primary concern is habitat fragmentation due to natural gas exploration and development which has resulted in increased road, well pad, and pipeline densities. This physical loss of habitat is exacerbated when combined with increasing human use.

Other factors contributing to the failure to achieve Standard 3 for wildlife include: the encroachment of juniper into sagebrush habitats, a lack of forb production, poor condition of sagebrush, and poor understory conditions. Some individual sagebrush stands are hedged and some stands are decadent with poor age class diversity and limited regeneration or recruitment.

The proposed action would result in direct and indirect losses of habitat and result in increased human use in the area. Given the level of activity in the greater area, the proposed action may further trend the watershed away from meeting Standard 3 for some terrestrial wildlife species.

The no action alternative would contribute to indirect habitat losses in ways comparable to the proposed action but on a smaller scale. As such, the no action alternative may contribute to the trend away from meeting Standard 3 for some terrestrial wildlife species.

### **SUMMARY OF CUMULATIVE IMPACTS**

The *Glenwood Springs Oil and Gas Leasing and Development Final Supplemental EIS* (FSEIS) (BLM 1999) analyzed three alternatives for oil and gas development in the Glenwood Springs Resource Area (GSRA). 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 FSEIS presents the most current analysis of cumulative impacts in the SCMDP area, it is incorporated by reference.

Until relatively recently, modifications of the region have been characteristic of agricultural and ranching lands, with localized industrial impacts associated with the railroad and I-70 highway corridors. 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 (BLM 1999: 4-1 to 4-68).

None of the cumulative impacts described in the FSEIS was characterized as significant, and new technologies and regulatory requirements have reduced the impacts of some land uses. Nonetheless, it is 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 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 adverse impact for some resources. Although the contribution would be very minor, the proposed action would contribute incrementally to the collective impact to air quality, vegetation, migratory birds, terrestrial wildlife, and other resources.

## INTERDISCIPLINARY REVIEW

<i>Name</i>	<i>Title</i>	<i>Responsibility</i>
Bridget Kobe Clayton	Natural Resource Specialist	Team Leader, Access and Transportation, Visual Resources, Solid and Hazardous Wastes, Socio-Economics
Beth Brenneman	Ecologist	Plants, Special Status Species (Plants), Invasive Non-native Species
Jeff Cook	Wildlife Biologist	Special Status Species (Wildlife and Fish), Birds of Conservation Concern, Aquatic and Terrestrial Wildlife
Karen Conrath	Geologist	Groundwater, Paleontology, Geology and Minerals
John Brogan	Archaeologist	Cultural Resources and Native American Concerns
Noel Ludwig	Hydrologist	Soil, Air, Surface Water, Waters of the U.S., Noise, Prime Farmland, Wetlands
Dane Geyer	Petroleum Engineer	Downhole Conditions of Approval

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## **APPENDIX A**

### **CONDITIONS OF APPROVAL (INCLUDING STANDARD AND SITE-SPECIFIC COAs)**

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## APPENDIX A

### SURFACE USE CONDITIONS OF APPROVAL SPRUCE CREEK MASTER DEVELOPMENT PLAN

#### **Standard COAs Applicable to All Activities within the SCMDP Area**

The following standard surface use COAs are in addition to all stipulations attached to the respective Federal leases and to any site-specific COAs for individual well pads. Wording and numbering of these COAs may differ from those included in the EA. In cases of discrepancies, the following COAs supersede earlier versions.

1. Administrative Notification. The operator shall notify the BLM representative at least 48 hours prior to initiation of construction on access roads, well pads, or pipelines.
2. Road Construction and Maintenance. Roads shall be crowned, ditched, surfaced, drained with culverts and/or water dips, and constructed to BLM Gold Book standards. Initial gravel application shall be a minimum of 4 inches. The operator shall provide timely year-round road maintenance and cleanup on the access roads. A regular schedule for maintenance shall include, but not be limited to, blading, ditch and culvert cleaning, road surface replacement, and dust abatement. When rutting within the traveled way becomes greater than 6 inches, blading, and/or gravelling shall be conducted as approved by the authorized officer.
3. Dust Abatement. The operator shall implement dust abatement measures as needed to prevent fugitive dust from vehicular traffic, equipment operations, or wind events. The authorized officer may direct the operator to change the level and type of treatment (watering or application of various dust agents, surfactants, and road surfacing material) if dust abatement measures are observed to be insufficient to prevent fugitive dust.

Speed control measures on all project-related unpaved roads shall also be implemented to reduce vehicle fugitive dust concerns, as well as for human health and safety reasons.

4. Drainage Crossings and Culverts. Construction activities at perennial, intermittent, and ephemeral drainage crossings (e.g. burying pipelines, installing culverts) shall be timed to avoid high flow conditions and shall consist of either a piped stream diversion or the use of a coffer dam and pump to divert flow around the disturbed area.

Culverts at drainage crossings shall be designed and installed to pass a 25-year or greater storm event. On perennial and intermittent streams, culverts shall be designed to allow for passage of aquatic biota. The minimum culvert diameter in any installation for a drainage crossing or road drainage shall be 18 inches. Contact Noel Ludwig, Glenwood Springs Energy Office Hydrologist, at 970-947-5215 or Noel\_Ludwig@blm.gov. Crossings of drainages deemed to be jurisdictional waters of the U.S. pursuant to Section 404 of the Clean Water Act may require additional culvert design capacity. Due to the flashy nature of area drainages and anticipated culvert maintenance, the U.S. Army Corps of Engineers recommends designing drainage crossings for the 100-year event. Contact Sue Nall at 970-243-1199 x16 or susan.nall@usace.army.mil.

Culverts shall be inspected annually to ensure they are functioning properly and shall be promptly maintained (e.g., by removing any debris causing blockage) or replaced when necessary. All culverts

that have failed or are not aligned in the natural drainage of the channel will be replaced and aligned with the natural channel of the drainage along a gradient that maintains the natural drainage velocity.

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

Pipelines installed beneath stream crossings shall be buried at a minimum depth of 4 feet below the channel substrate to avoid exposure by channel scour and degradation. Following burial, the channel grade and substrate composition shall be returned to pre-construction conditions.

5. Jurisdictional Waters of the U.S. In accordance with Section 404 of the Clean Water Act, the operator shall obtain a Department of the Army permit from the U.S. Army Corps of Engineers prior to discharging fill material into waters of the U.S. or modifying, developing, or affecting springs—including any ground-disturbing activity within 100 feet of a spring or any activity that would affect the discharge of a spring. Waters of the U.S. are defined in 33 CFR Section 328.3 and may include wetlands as well as perennial, intermittent, and ephemeral streams and springs. Permanent impacts to waters of the U.S. may require mitigation. Contact Sue Nall, Regulatory Specialist, Colorado/Gunnison Basin Regulatory Office, U.S. Army Corps of Engineers, at 970-243-1199 x16 or [susan.nall@usace.army.mil](mailto:susan.nall@usace.army.mil).
6. Wetlands and Riparian Zones. The operator shall restore temporarily disturbed wetlands or riparian areas. The operator shall consult with the BLM Glenwood Springs Energy Office to determine appropriate mitigation, including verification of native plant species to be used in restoration. Contact Noel Ludwig, Glenwood Springs Energy Office Hydrologist, at 970-947-5215 or [Noel\\_Ludwig@blm.gov](mailto:Noel_Ludwig@blm.gov).
7. Reclamation. The goals, objectives, timelines, measures, and monitoring methods for final reclamation of oil and gas disturbances are described in Appendix I (Surface Reclamation) of the 1998 Draft Supplemental EIS (DSEIS). Specific measures to follow during interim and temporary (pre-interim) reclamation are described below.
  - a. Deadline for Temporary Seeding and Interim Reclamation. Topsoil storage piles, stormwater control features, and cut-and-fill slopes shall undergo temporary seeding to stabilize the material and minimize weed infestations within 30 days following completion of pad construction. Interim reclamation to reduce a well pad to the maximum size needed for production shall be completed within 6 months following completion of the last well planned for the pad.

Both of these deadlines are subject to being extended upon approval of the authorized officer based on season, timing limitations, or other constraints on a case-by-case basis.
  - b. Topsoil Stripping, Storage, and Replacement. Topsoil shall be stripped following removal of vegetation during construction of well pads, pipelines, roads, or other surface facilities. This shall include, at a minimum, the upper 6 inches of soil. Any additional topsoil present at a site, such as indicated by color or texture, shall also be stripped. The authorized officer may specify a stripping depth during the onsite visit. The stripped topsoil shall be stored separately from subsoil or other excavated material and replaced prior to final seedbed preparation.
  - c. Seedbed Preparation. For cut-and-fill slopes, initial seedbed preparation shall consist of backfilling and recontouring to achieve the configuration specified in the reclamation plan. For compacted areas, initial seedbed preparation shall include ripping to a minimum depth of 18 inches, with a maximum furrow spacing of 2 feet. Where practicable, ripping shall be conducted

in two passes at perpendicular directions. Following final contouring, the backfilled or ripped surfaces shall be covered evenly with topsoil.

Final seedbed preparation shall consist of scarifying (raking or harrowing) the spread topsoil prior to seeding. If more than one season has elapsed between final seedbed preparation and seeding, and if the area is to be broadcast-seeded or hydroseeded, this step shall be repeated no more than 1 day prior to seeding to break up any crust that has formed.

Seedbed preparation is not required for topsoil storage piles or other areas of temporary seeding.

Requests for use of soil amendments, including basic product information, shall be submitted to the BLM for approval.

- d. Seed Mixes. A seed mix consistent with BLM standards in terms of species and seeding rate for the specific habitat type shall be used on all BLM lands affected by the project (see Attachments 1 and 2 of the letter provided to operators dated May 1, 2008). Note that temporary seeding allows use of a seed mix containing sterile hybrid non-native species in addition to native perennial species.

For private surfaces, the menu-based seed mixes are recommended, but the surface landowner has ultimate authority over the seed mix to be used in reclamation. The seed shall contain no noxious, prohibited, or restricted weed seeds and shall contain no more than 0.5 percent by weight of other weed seeds. Seed may contain up to 2.0 percent of "other crop" seed by weight, including the seed of other agronomic crops and native plants; however, a lower percentage of other crop seed is recommended. Seed tags or other official documentation shall be supplied to the BLM Glenwood Springs Energy Office Ecologist (Beth Brenneman, 970-947-5232 or [beth\\_brenneman@blm.gov](mailto:beth_brenneman@blm.gov)) at least 14 days before the date of proposed seeding for acceptance. Seed that does not meet the above criteria shall not be applied to public lands.

- e. Seeding Procedures. Seeding shall be conducted no more than 24 hours following completion of final seedbed preparation.

Where practicable, seed shall be installed by drill-seeding to a depth of 0.25 to 0.5 inch. Where drill-seeding is impracticable, seed may be installed by broadcast-seeding at twice the drill-seeding rate, followed by raking or harrowing to provide 0.25 to 0.5 inch of soil cover. Hydroseeding and hydromulching may be used in temporary seeding or in areas where drill-seeding or broadcast-seeding/raking are impracticable. Hydroseeding and hydromulching must be conducted in two separate applications to ensure adequate contact of seeds with the soil.

If interim revegetation is unsuccessful, the operator shall implement subsequent reseeding until interim reclamation standards are met. Requirements for reseeding of unsuccessful temporary seeding will be considered on a case-by-case basis.

- f. Mulch. Mulch shall be applied within 24 hours following completion of seeding. In areas of interim reclamation that used drill-seeding or broadcast-seeding/raking, mulch shall consist of crimping certified weed-free straw or certified weed-free native grass hay into the soil. Hydromulching may be used in areas of interim reclamation where crimping is impracticable, in areas of interim reclamation that were hydroseeded, and in areas of temporary seeding regardless of seeding method.

NOTE: Mulch is not required in areas where erosion potential mandates use of a biodegradable erosion-control blanket (straw matting).

- g. 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. Biodegradable straw matting, bales or wattles of weed-free straw or weed-free native grass hay, or well-anchored fabric silt fence shall be used on cut-and-fill slopes and along drainages to protect against soil erosion. Additional BMPs shall be employed as necessary to reduce erosion and offsite transport of sediment.
  - h. Site Protection. The pad shall be fenced to BLM standards to exclude livestock grazing for the first two growing seasons or until seeded species are 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.
  - i. 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 the BLM, the operator shall be responsible for implementing the corrective actions or other measures specified by the authorized officer.
8. Weed Control. The operator shall regularly monitor and promptly control noxious weeds or other undesirable plant species as set forth in the Glenwood Springs Energy Office *Noxious and Invasive Weed Management Plan for Oil and Gas Operators*, dated March 2007. A Pesticide Use Proposal (PUP) must be approved by the BLM prior to the use of herbicides. Annual weed monitoring reports shall be submitted by **December 31**. Contact Beth Brenneeman, Glenwood Springs Energy Office Ecologist, at 970-947-5232 or [beth\\_brenneeman@blm.gov](mailto:beth_brenneeman@blm.gov).
9. Big Game Winter Range Timing Limitation. This COA applies to all lease areas or rights-of-way that do not already contain a seasonal wildlife Timing Limitation (TL) stipulation. To minimize impacts to wintering big game, no construction, drilling or completion activities shall occur during a TL period from **January 1 to March 1** annually. To reduce impacts to wintering big game, remote sensing should be used for production monitoring, and unavoidable monitoring or maintenance activities should be conducted between 9 a.m. and 3 p.m., to the extent practicable. These additional recommendations apply to the period from December 1 to April 30. Contact Jeff Cook, Glenwood Springs Energy Office Wildlife Biologist, at 970-947-5231 or [jeffrey\\_cook@blm.gov](mailto:jeffrey_cook@blm.gov).
10. Raptor Nesting. Raptor nest surveys conducted in 2007 for the SCMDP did not result in location of raptor nest structures within 0.25 mile of a well pad or 0.125 mile of roads or pipelines. Therefore, a Raptor Nesting Timing Limitation COA is not attached to this APD. Although BLM considers surveys conducted for a NEPA Environmental Assessment to be valid for 5 years, new nests may be built and occupied between the initial surveys and project implementation. To ensure compliance with the Migratory Bird Treaty Act, the operator should schedule construction or drilling activities to begin outside the raptor nesting season (February 1 to August 15) if practicable. If initiation of construction or drilling during these dates cannot be avoided, the operator is responsible for complying with the Migratory Bird Treaty Act, which prohibits the “take” of birds or active nests (those containing eggs or young), including nest failure caused by noise and human activity. Contact

Jeff Cook, Glenwood Springs Energy Office Wildlife Biologist, at 970-947-5231 or [jeffrey\\_cook@blm.gov](mailto:jeffrey_cook@blm.gov)).

11. Migratory Birds. It shall be the responsibility of the operator to comply with the Migratory Bird Treaty Act (MBTA) with respect to “take” of migratory bird species. Under the MBTA, “take” means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The operator shall prevent use by migratory birds of any pit containing fluids associated with oil or gas operations—including but not limited to reserve pits, produced water pits, frac-water pits, cuttings trenches (if covered by water/fluid), and evaporation pits. Fluids in these pits may pose a risk to migratory birds (e.g., waterfowl, shorebirds, wading birds, songbirds, and raptors) as a result of ingestion, absorption through the skin, or interference with buoyancy and temperature regulation. Several established methods to prevent bird access are known to be effective, such as netting or bird-balls. However, the use of flagging has proven ineffective in deterring birds from using ponds or pits and provides no assurance of compliance with the MBTA.

Regardless of the method used, it should be employed as soon as practicable after the pit has begun receiving liquids. At a minimum, the method shall be in place within 24 hours following the placement of fluids into a pit. Because of high toxicity to birds, oil slicks and oil sheens should immediately be skimmed off the surface of any pit that is not netted. The most effective way to eliminate risk to migratory birds is prompt drainage, closure, and reclamation of pits, which is strongly encouraged. All mortality or injury to species protected by the MBTA shall be reported immediately to the BLM project lead and to the U.S. Fish and Wildlife Service. For further assistance, contact Creed Clayton, USFWS Biologist assigned to the Glenwood Springs Energy Office, at 970-947-5219 or [creed\\_clayton@fws.gov](mailto:creed_clayton@fws.gov), and visit <http://www.fws.gov/mountain-prairie/contaminants/oilpits.htm>.

12. Birds of Conservation Concern. Pursuant to BLM Instruction Memorandum 2008-050, all surface-disturbing activities are prohibited from May 1 to June 30 to reduce impacts to Birds of Conservation Concern (BCC). An exception to this COA will be granted if nesting surveys conducted no more than one week prior to surface-disturbing activities indicate that no BCC species are nesting or otherwise present within 10 meters of the area to be disturbed. Nesting surveys shall include an aural survey for diagnostic vocalizations in conjunction with a visual survey for adults and nests. Surveys shall be conducted by a qualified breeding bird surveyor between sunrise and 10:00 AM under favorable conditions for detecting and identifying a BCC species. Contact Jeff Cook, Glenwood Springs Energy Office Wildlife Biologist, at 970-947-5231 or [jeffrey\\_cook@blm.gov](mailto:jeffrey_cook@blm.gov)).
13. Range Management. Range improvements (fences, gates, reservoirs, pipelines, etc) shall 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. See COA#18 for measures to prevent livestock from entering reserve or cuttings pits.
14. Ips Beetle. To avoid mortality of pinyon pines due to infestations of the *Ips* beetle, any pinyon trees damaged during road, pad, or pipeline construction shall be chipped after being severed from the stump or grubbed from the ground, buried in the toe of fill slopes (if feasible), or cut and removed from the site within 24 hours to a location approved by the Colorado State Forest Service.
15. Paleontological Resources. All persons associated with operations under this authorization shall 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 operator 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 BLM authorized officer.

Where feasible, the operator 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 operator shall work around or set the discovery aside in a safe place to be accessed by the BLM-permitted paleontologist.

16. Cultural Education/Discovery. All persons in the area who are associated with this project shall 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 43 CFR 10.4(g), the BLM authorized officer shall 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 shall stop in the vicinity of the discovery, and the discovery shall be protected for 30 days or until notified by the BLM authorized officer to proceed.

If in connection with operations under this contract, the operator, its contractors, their subcontractors, or the employees of any of them discovers, encounters, or becomes aware of any objects or sites of cultural value or scientific interest such as historic ruins or prehistoric ruins, graves or grave markers, fossils, or artifacts, the operator shall immediately suspend all operations in the vicinity of the cultural resource and shall notify the BLM authorized officer 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 BLM authorized officer. Approval to proceed will be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the BLM authorized officer from a Federal agency insofar as practicable. When not practicable, the operator shall bear the cost of the services of a non-Federal professional.

Within five working days, the BLM authorized officer will inform the operator as to:

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

The operator may relocate activities to avoid the expense of mitigation and 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 operator shall be responsible for mitigation costs. The BLM authorized officer will provide technical and procedural guidelines for relocation and/or to conduct mitigation. Upon verification from the BLM authorized officer that the required mitigation has been completed, the operator will be allowed to resume construction.

Antiquities, historic ruins, prehistoric ruins, and other cultural or paleontological objects of scientific interest that are outside the authorization boundaries but potentially affected, either directly or indirectly, by the proposed action shall also be included in this evaluation or mitigation. Impacts that occur to such resources as a result of the authorized activities shall be mitigated at the operator's cost, including the cost of consultation with Native American groups.

Any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item, or archaeological resources on public lands is subject to arrest and penalty of law (16 USC 433, 16 USC 470, 18 USC 641, 18 USC 1170, and 18 USC 1361).

17. Visual Resources. Production facilities shall be placed to avoid or minimize visibility from travel corridors, residential areas, and other sensitive observation points—unless directed otherwise by the authorized officer due to other resource concerns—and shall be placed to maximize reshaping of cut-and-fill slopes and interim reclamation of the pad.

To the extent practicable, existing vegetation shall be preserved when clearing and grading for pads, roads, and pipelines. The authorized officer may direct that cleared trees and rocks be salvaged and redistributed over reshaped cut-and-fill slopes or along linear features.

Above-ground facilities shall be painted Juniper Green to blend with the existing landscape.

18. Reserve Pit. In addition to standard operating procedure specified in Onshore Order #1, Williams Master APD for the Piceance Basin and the Spruce Creek Master Development Plan, the following shall also apply:

- If the operator chooses to solidify pit material in place, a solidification material that does not contain polyacrylamide shall be utilized.
- Prior to commencement of drilling operations, the reserve/cuttings pit shall be fenced on three sides using three stands of barbed wire. The fourth side of the reserve pit shall be fenced immediately upon removal of the drilling rig and the fencing shall be maintained until the pit is backfilled.

19. Soils. Cuts and fills shall be minimized when working on erosive soils and slopes in excess of 30 percent. Cut-and-fill slopes shall be stabilized through revegetation practices with an approved seed mix shortly following construction activities to minimize the potential for slope failures and excessive erosion. Fill slopes adjacent to drainages shall be protected with well-anchored silt fences, straw wattles, or other acceptable BMPs designed to minimize the potential for sediment transport. On slopes greater than 50 percent, BLM personnel may request a professional geotechnical analysis prior to construction.

20. Noise. During drilling and completion, the operator shall angle exhaust muffler stacks on power units or generators away from private homes located within 0.5 mile. All generators and pumps shall be installed and operated in a manner that, at a minimum, meets the Colorado Oil and Gas Conservation Commission's Noise Abatement regulation (No. 802) for Residential/Agricultural/Rural Zone which, in summary, requires a noise level not to exceed 50 db(A) between 7:00 pm and 7:00 am from a measurement distance of 350 feet from the noise source.

The operator shall encourage carpooling of construction and drilling crews to mitigate vehicle noise impacts. Following well completion, operator shall use telemetry equipment at all gas well meters to reduce vehicle traffic and associated noise within the project area.



## **Site-Specific Conditions of Approval Applicable to Selected Well Pads**

### **Federal 7-94-S-04**

1. The operator shall test all domestic water wells and natural springs within a ½ mile radius of this pad, as well as a downgradient location on Spruce Creek, within 30 days after (a) each well penetrates to a depth of 500 feet, or (b) it penetrates 100 feet past the water well(s) depth, whichever depth is shallower. In addition, the operator shall test these water wells, springs, and Spruce Creek within 30 days upon the completion of hydraulic fracturing treatments. Testing shall be done regardless of whether these water sources are on Federal or private land. Water samples should be tested for chemical components of fluids utilized or encountered in the drilling and completion operations.
2. Visual Resource Management: Facilities shall be painted Juniper Green.

Although the entire SCMDP area is considered Class IV VRM (see section 2.11), best management practices (BMPs) should be implemented to the extent practicable. Examples of BMPs include leaving the maximum number of juniper trees at the base of the fill slope to screen the visual scar and using the basalt rock that exists onsite to create a textured surface on cut/fill slopes during reclamation. In addition, on the access road which crosses the Sage meadow/field, we recommend the cut and fill slopes be graded back to meet natural grades, continuing the meadow/field to the edge of the road and eliminating the steep cut/fill slopes typically constructed to meet grade.

3. Federal lease COC046030 includes the following 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.

### **SR 12-9**

1. No fill material shall be allowed to enter Spruce Creek, which passes approximately 150 feet beyond the southeast corner of the pad.
2. Visual Resource Management: Federal facilities shall be painted Juniper Green. We recommend all facilities at this location be painted Juniper Green.

Although the entire SCMPD area is considered Class IV VRM (see section 2.11), BMPs should be implemented to the extent practicable. Examples of BMPs include leaving a maximum number of juniper trees at the base of the fill slope to screen the visual scar and using the basalt rock that exists onsite to create a textured surface on cut/fill slopes during reclamation.

### **SR 24-9**

1. The operator shall test all natural springs within 0.25 mile of this pad within 30 days after each well penetrates to a depth of 500 feet, and within 30 days upon the completion of hydraulic fracturing treatments. Water samples should be tested for chemical components of fluids utilized or encountered in the drilling and completion operations.

2. The operator shall apply for BLM road and pipeline rights-of-way (ROWs) across portions of Section 9 (SWSW) that are “off lease” but serve Federal and fee wells planned on SR 24-9 pad.
3. The operator shall apply for BLM right-of-way to occupy the Federal surface SR 24-9 for all-surface disturbing activities serving fee wells (SR 13-9) including road improvements, pipeline connection, pad construction, and facility locations.
4. Terms and conditions for the pending BLM ROW (referenced in site-specific COA #2 above) include a 5-month winter Timing Limitation (TL). The terms and conditions state:

“To protect wildlife winter range, the access road through Section 9 shall not be used to support construction, drilling, or completion activities at the 24-9 pad during the period December 1 to April 30 annually.”

An exception to the TL may be made, as noted:

“Under mild winter conditions, the last 60 days of the seasonal limitation period may be suspended by BLM after consultation with the Colorado Division of Wildlife. 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.”

5. Visual Resource Management: Facilities shall be painted Juniper Green.

Although the entire SCMDP area is considered Class IV VRM (see section 2.11), BMPs should be implemented to the extent practicable. Examples of BMPs include leaving a maximum amount of scrub oak/juniper trees at the base of the fill to act as a visual screen and screening the pad from the adjacent trailhead.

The southeastern and southwestern corners of the pad shall be rounded to the extent possible to reduce cut size.

#### **SR 33-9**

1. All feasible efforts shall be made to minimize cuts and other disturbance along slopes greater than 30%. As currently mapped, slopes exceeding 30% exist across the southeast quarter.
2. The operator will apply for BLM road and pipeline rights-of-way (ROWs) across portions of section 9 (SWSW) that are “off lease” but serve federal and fee wells planned on SR 33-9 pad.
3. The operator will apply for BLM right-of-way to occupy the federal surface SR 33-9 for all-surface disturbing activities serving fee wells (SR 532-9) including road improvements, pipeline connection, pad construction, and facility locations.
4. Terms and conditions for the pending BLM ROW (referenced in site-specific COA #2 above) include a 5-month winter Timing Limitation (TL). The terms and conditions state:

“To protect wildlife winter range, the access road through Section 9 shall not be used to support construction, drilling, or completion activities at the 33-9 pad during the period December 1 to April 30 annually.”

An exception to the TL may be made, as noted:

“Under mild winter conditions, the last 60 days of the seasonal limitation period may be suspended by BLM after consultation with the Colorado Division of Wildlife. 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.”

5. Visual Resource Management. Facilities shall be painted Juniper Green.

Although the entire SCMDP area is considered Class IV VRM (see section 2.11), BMPs should be implemented to the extent practicable. An example of a BLM includes leaving a maximum number of scrub oak/juniper trees at the base of the fill to act as a visual screen.

6. The exact location of production facilities will be determined by the authorized officer upon construction of the 33-9 location.
7. The southeastern and southwestern corner of the pad shall be rounded to the extent possible to reduce the extent of the cut.
8. Plats #7 and #8 shall be disregarded. Production facilities will be located upon completion of the pad in a manner to allow for maximum recontouring during interim and final reclamation.



## **APPENDIX B**

### **DOWNHOLE CONDITIONS OF APPROVAL**

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## APPENDIX B

### DOWNHOLE CONDITIONS OF APPROVAL

#### Downhole COAs for Applications for Permits to Drill

**Company/Operator:** Williams Production RMT Company

**Surface Location:** NWSE, Section 9, Township 7 South, Range 94 West, 6<sup>th</sup> P.M.

**Pad Name:** SR 33-9

<u>Well Name</u>	<u>Well No.</u>	<u>Bottomhole Location</u>	<u>Lease</u>
SR	11-15	NWNW Sec. 9, T. 7S, R. 94W.	COC063721
SR	343-9	NESE Sec. 9, T. 7S, R. 94W.	COC063721
SR	43-9	NESE Sec. 9, T. 7S, R. 94W.	COC063721
SR	33-9	NWSE Sec. 9, T. 7S, R. 94W.	COC063721

**Surface Location:** SWSE, Section 4, Township 7 South, Range 94 West, 6<sup>th</sup> P.M.

**Pad Name:** Federal 7-94-5-4

<u>Well Name</u>	<u>Well No.</u>	<u>Bottomhole Location</u>	<u>Lease</u>
RWF	344-4	SESE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	43-4	NESE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	333-4	NWSE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	433-4	NWSE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	343-4	NESE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	444-4	SESE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	443-4	NESE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	543-4	NESE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	44-4	SESE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	33-4	NWSE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	544-4	SESE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	34-4	SWSE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	334-4	SWSE Sec. 4, T. 7S, R. 94W.	COC46030
RWF	533-4	NWSE Sec. 4, T. 7S, R. 94W.	COC46030

**Surface Location:** SENW, Section 17, Township 6 South, Range 64 West, 6<sup>th</sup> P.M.  
**Pad Name:** SR 24-9

<u>Well Name</u>	<u>Well No.</u>	<u>Bottomhole Location</u>	<u>Lease</u>
SR	523-9	NESW Sec. 9, T. 7S, R. 94W.	COC06935
SR	323-9	NESW Sec. 9, T. 7S, R. 94W.	COC06935
SR	423-9	NESW Sec. 9, T. 7S, R. 94W.	COC06935

**Surface Location:** SWNW, Section 9, Township 7 South, Range 94 West, 6<sup>th</sup> P.M.

<u>Well Name</u>	<u>Well No.</u>	<u>Bottomhole Location</u>	<u>Lease</u>
SR	23-9	NESW Sec. 9, T. 7S, R. 94W.	COC06935
SR	22-9	SESW Sec. 9, T. 7S, R. 94W.	COC06935
SR	322-9	SESW Sec. 9, T. 7S, R. 94W.	COC06935
SR	422-9	SESW Sec. 9, T. 7S, R. 94W.	COC06935

The downhole COAs identified in the Williams Production RMT Company Master APD (Approved April 27, 2006) for the Rulison Prospect Area E shall apply.

In accordance with 43 CFR 3162.4(b), the operator shall submit a complete set of electrical/mechanical logs in .LAS format with standard Form 3160-4, Well Completion or Recompletion Report and LOG. Please contact Karen Conrath at 970-947-5235 or karen\_conrath@blm.gov for clarification.

Twenty-four hours *prior* to (a) spudding, (b) conducting BOPE tests, (c) running casing strings, and (d) within twenty-four hours *after* spudding, the GSEO shall be notified. One of the following GSEO's inspectors shall be notified by phone: Steve Ficklin at 970-947-5212, Julie King shall at 970-947-5239, or Todd Sieber at 970-947-5220.

A verbal approval will need to be granted prior to commencing remedial work, plugging operations on newly drilled boreholes, changes within the drilling plan, or conducting other operations not specified within the APD. Please contact Dane Geyer at 970-947-5229 (office) or 970-589-6887 (cell) for verbal approvals. As a secondary contact, Marty O'Mara may be contacted at 970-947-5221 (office) or 970-319-5837 (cell).

If a well control issue arises (e.g. kick, blowout, or water flow) Dane Geyer shall be notified immediately after the situation is safely controlled.

## **Downhole COAs for Approval of Notices to Drill**

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

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 drillsite whenever active construction or drilling operations are underway.

**Be aware 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.**

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 individuals:

Dane Geyer	C: 970-589-6887
Petroleum Engineer	W: 970-947-5229

Todd Sieber	W: 970-947-5220
Petroleum Engineering Tech-	

Julie King	W: 970-947-5239
Petroleum Engineering Tech-	

Steve Ficklin	W: 970-947-5213
Lead Petroleum Eng Tech-	C: 970-319-2509

BLM Fax: 970-947-5267

## **EPA'S LIST OF NONEXEMPT EXPLORATION AND PRODUCTION WASTES**

While the following wastes are nonexempt, they are not necessarily hazardous.

- Unused fracturing fluids or acids
- Gas plant cooling tower cleaning wastes
- Painting wastes
- Oil and gas service company wastes, such as empty drums, drum rinsate, vacuum truck rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids
- Vacuum truck and drum rinsate from trucks and drums, transporting or containing nonexempt waste
- Refinery wastes
- Liquid and solid wastes generated by crude oil and tank bottom reclaimers
- Used equipment lubrication oils
- Waste compressor oil, filters, and blowdown
- Used hydraulic fluids
- Waste solvents
- Waste in transportation pipeline-related pits
- Caustic or acid cleaners
- Boiler cleaning wastes
- Boiler refractory bricks
- Incinerator ash
- Laboratory wastes
- Sanitary wastes
- Pesticide wastes
- Radioactive tracer wastes
- Drums, insulation, and miscellaneous solids

**APPENDIX C**  
**PUBLIC COMMENTS AND RESPONSES**

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## APPENDIX C

### PUBLIC COMMENTS AND RESPONSES

A Public Notice requesting comments on the proposal was published in the Glenwood Springs Post Independent on June 27, 2008 and the Rifle Citizen Telegram on July 3, 2008. In addition, the public notice was mailed directly to multiple state and Federal agencies, interest groups, adjacent landowners, Garfield County, and the Colorado Division of Wildlife (CDOW). The 30-day public comment period expired on July 23, 2008.

In response to the solicitation for comment, BLM received responses from eight interested parties, including the Colorado Division of Wildlife (CDOW), the Wilderness Workshop, and several adjacent landowners.

Following is a summary of the comments and responses.

#### **Colorado Division of Wildlife**

##### *Comments:*

Review of Draft EA – CDOW would appreciate the opportunity to review a more detailed draft EA.

*Response:* The Glenwood Springs Field Office (GSFO) process for energy-related environmental assessments (EAs) includes scoping based on the proposed action. No draft EA is prepared for review by the public or cooperating agencies. During informal discussions between BLM and CDOW regarding the topic of review of a draft EA (and specifically the impacts analysis and mitigation measures) prior to publication of a final document, it was clear that CDOW's input would on a draft EA would have to be a formal process with review and approval at the headquarters level and would take several weeks. Because this timeframe is inconsistent with our mandate for streamlining oil and gas permitting, we have elected to not pursue this course but instead continue to work with CDOW informally during the development of mitigation measures for both direct and indirect impacts. This process was followed for the SCMDP.

Size of Analysis Area – CDOW request that a larger geographic area along with neighboring developmental impacts be adequately analyzed to truly disclose impacts to the area.

*Response:* As noted in the full comment by CDOW, the scale of a Master Development Plan (MDP) such as the SCMDP is driven by the scale of development being proposed by the operator in each specific case. Some MDPs cover a larger area than others, and BLM acknowledges that the SCMDP is relatively small compared to some other MDPs or Geographic Area Plans (GAPs). MDPs/GAPs are based on the groups of leases being developed for a particular project, which includes wells and pads along with pipelines, access roads, and ancillary facilities. BLM does not believe that it can force operators to put forth more expansive plans that go beyond the scope of each development area. Nonetheless, even relatively small MDPs such as the SCMDP represent a significant improvement in the ability of operators and BLM to plan and manage a project—including impact analysis and mitigation planning—compared to piecemeal development.

BLM's ability to mandate mitigation and its authority work with the operator to provide additional "voluntary" mitigation is focused on direct and indirect onsite impacts rather than offsite impacts. Consequently, we do not attempt to analyze, or mitigate for, more remote impacts. However, the SCMDP

and other MDP/GAP documents disclose that project impacts are cumulative with other energy-related and non-energy-related land uses and resource developments in the GSFO area.

Reclamation Standards – CDOW would like to see the reclamation standards for the SCMPD related directly to Appendix E of the 1998 DSEIS, which identifies performance-based reclamation standards such as specific shrub and forb percentages.

*Response:* Note the language of the introductory sentences of the standard conditions of approval (COAs) for reclamation, attached to every environmental assessment, right-of-way grant, and drilling permit approved by the Energy Office: “The goals, objectives, timelines, measures, and monitoring methods for final reclamation of oil and gas disturbances are described in Appendix I (Surface Reclamation) of the 1998 Draft Supplemental EIS (DSEIS).”

The COAs then go into considerable detail on the methods required by BLM for temporary seeding and interim reclamation of oil and gas projects. These methods have evolved, and continue to be refined, based on on-the-ground experience of BLM, operators, and their reclamation contractors regarding what works best in specific situations. The general COA has dropped a requirement for shrubs and forbs (except for shrubs in salt desert habitats) because of the complication they create relative to weed control. However, woody plants are sometimes specified for visual or wildlife mitigation purposes. Given the long timeframe before final reclamation of oil and gas project sites, and the likelihood of continued changes in our approach to reclamation, we believe that requiring a detailed planting plan at the planning and permitting stages is inappropriate and unrealistic.

Adequacy of Lease Information for FONSI Determination – Without knowledge of specific lease information and which areas will utilize management prescriptions such as CSUs and NSOs, one cannot readily make decisions regarding whether the SCMDP would lead to a Finding of No Significant Impact.

*Response:* Such information was provided in the proposed action provided for public review and comment. The proposed action published on the BLM website could have included a synopsis of the leases and associated stipulations (NSOs, CSUs, etc.) to aid the public and cooperating agencies in understanding the types of restrictions available to BLM for the project, and where these restrictions would apply. However, note that decisions regarding whether the SCMDP leads to a FONSI are the exclusive purview of BLM.

Inclusion of BMPs and COAs – A BMP (best management practices) list coupled with the COA (condition of approval) stipulations would greatly reduce impacts and allow for a good analytical opportunity. CDOW offers its assistance in developing the needed COAs and mitigation as it relates to this and other proposals.

*Response:* COAs are routinely used by BLM to supplement restrictive lease stipulations, particularly on older leases having few or no such stipulations. A complete list of standard and site-specific COAs is provided in Appendix A of the EA. Some of the measures identified by CDOW in its full comment (e.g., remote sensing, restrictions on vehicular traffic) are items that BLM does not have the authority to specify but are increasingly used by the operators—including Williams. BLM has worked closely with CDOW and the operator to identify types of, and locations for, for wildlife mitigation as part of the SCMPD process.

## **Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition**

### *Comments:*

Scope of Analysis – Council on Environmental Quality (CEQ) guidelines require that BLM consider connected actions, similar actions, and cumulative actions together with direct and indirect impacts in its assessment of environmental impacts.

*Response:* Oil and gas development of the type represented by the SCMDP was anticipated, analyzed, and disclosed in the 1999 Final Supplemental Environmental Impact Statement (FSEIS) for oil and gas development in the Glenwood Springs Field Office (GSFO) area and updated in the cumulative impact analysis for the 2007 Resource Management Plan Amendment and Environmental Impact Statement (RMPA/EIS) for the Roan Plateau Planning Area. Furthermore, the Summary of Cumulative Impacts in the EA discusses the fact that actions authorized pursuant to the EA are cumulative with other oil and gas development as well as non-energy-related impacts (e.g., agricultural, industrial, commercial, and residential) associated with past, present, and anticipated future land uses of western Garfield County. The cumulative impacts of the SCMDP are within the range previously disclosed and analyzed in the earlier NEPA documents to which it is tiered.

Directional Drilling – The BLM should mandate use of directional drilling to reduce impacts of the proposed development.

*Response:* BLM regulations do not allow it to mandate a particular technology for recovering oil and gas resources. However, the use of directional drilling has been greatly expanded in the GSFO area due to economic considerations, advances in technology, and increased awareness by operators of the need to reduce impacts. In the case of the SCMDP, for example, directional drilling is the reason 58 wells are proposed from only 4 (one existing) well pads.

Human Health Impacts – BLM must study and disclose impacts to human health associated with proposed development including effects associated with air emissions, use of toxic chemicals, and water quality.

*Response:* The 1999 FSEIS and 2007 Roan Plateau RMPA/EIS disclosed potential types and sources of human health impacts associated with oil and gas development. None of the reasonably anticipated impacts was found to be significant. The measures that the comment states BLM should consider and implement to protect human health consist almost entirely of measures that already are part of the SCMDP project proposal (e.g., use water pipelines to minimize truck traffic), standard measures for oil and gas development in the GSFO area (e.g., dust suppression, noise abatement, water management program, water disposal plan, setback from springs, protection of springs), or not mandated by BLM but managed to minimize or avoid adverse impacts (e.g., proper management of cuttings in lieu of closed-loop drilling, proper design of pits in lieu of eliminating pits), etc.

Air Quality – BLM must thoroughly analyze direct, indirect, and cumulative air impacts from this project as well as all connected actions before authorizing development.

*Response:* The 2007 Roan Plateau RMPA/EIS included a near-field and far-field impact analysis for oil and gas development, including both human-health-related and cumulative visibility-related impacts. The results of the large scale of development anticipated in that analysis resulted in no or negligible air quality impacts, including cumulative sources. The scale of development associated with the SCMDP is well within the cumulative impacts addressed by the Roan Plateau RMPA/EIS to which the SCMDP is tiered.

Climate Change – BLM must analyze all life cycle emissions of the proposed development.

*Response:* The emission of carbon dioxide and other greenhouse gases and the potential effects of increased atmospheric concentrations of greenhouse gases on global climate were not addressed in the 1999 FSEIS or the 2007 Roan Plateau RMPA/EIS. However, it is clear that emissions of greenhouse gases produced within the SCMDP area would represent a very minor addition to emissions associated with oil and gas development within the GSFO area and a negligible addition to emissions from all sources in the GSFO area. Moreover, oil and gas produced in the SCMDP area would go toward meeting current or anticipated near-term demand and would not significantly affect the type, scale, or schedule for availability of alternative energy sources, which are driven by geopolitical and socioeconomic considerations at national and global scales. While we are cognizant of Secretarial Order 3226, issued on January 19, 2001, mandating that “BLM and analyze potential climate change impacts when...making major decisions regarding the potential utilization of resources...,” we do not consider the SCMDP and its associated contribution to oil and gas production in the GSFO to constitute a “major” decision relative to global climate. In fact, BLM has declined to consider climate change when making some Federal lands available for oil and gas leasing of specific parcels. The case law cited in the comment deals with much larger scale decisions about use of fossil fuels (e.g., national changes in vehicle fuel efficiency standards, expansion of railroads to transport coal).

We suggest that the commenters address a similar comment to the GSFO with reference for the upcoming RMP Revision, currently in progress, and that the comment be provided to BLM in the format specified for that RMP process.

Habitat and Wildlife – BLM should analyze and disclose impacts to special status species and the extent of habitat fragmentation associated with this...proposed [action].

*Response:* The SCMDP addresses impacts to special status species, and other plants and wildlife, including impacts of habitat fragmentation in addition to direct and indirect habitat loss. The document also addresses directly most of the best management practices (BMPs) identified in the comment, as either components of the proposed action or conditions of approval attached by BLM. Most of the remaining issues listed in the comment are addressed indirectly (e.g., raptor-proof powerlines in lieu of buried powerlines) or addressed to the extent reasonable (e.g., steps to minimize rather than “avoid” surface disturbance).

Cultural, Geological, and Paleontological Resources – BLM should implement measures (list provided in the comment) to protect these resources.

*Response:* Cultural and geological/paleontological resources were considered by BLM during the SCMDP process, including a requirement for a cultural inventory of all lands and a paleontological inventory of any Class I or Class II lands. Conditions of approval specifically for the protection of cultural and geological/paleontological resources are included in Appendix A of the SCMDP and would be attached to any subsequent authorizations issued pursuant to the EA (e.g., drilling permits).

Socioeconomics – BLM must conduct a thorough socioeconomic analysis that includes community costs as well as nonmarket costs and benefits.

*Response:* The 1999 FSEIS and 2007 Roan Plateau RMPA/EIS considered socioeconomic impacts of large-scale oil and gas development. The amount of direct and indirect socioeconomic impacts associated with the SCMDP is a small increment of the overall energy-related and non-energy-related growth in Garfield County and is well within the range of the earlier analyses to which the SCMDP is tiered.

Scenic Values – The EA should address impacts to areas designated as VRM Class I and all citizens’ wilderness proposals and lands with wilderness characteristics such as Anvil Points, Magpie Gulch, and the Grand Hogback.

*Response:* The SCMDP area does not contain, nor would approval of the proposed action affect, any of the scenic values or other special values cited in the comment.

Impacts of Associated Infrastructure – BLM should seriously consider impacts associated with inextricable infrastructure improvements resulting from oil and gas development and industries fed by BLM-authorized oil and gas development... [including] gravel pits necessary to support natural gas development in western Colorado.

*Response:* The section of the SCMDP addressing cumulative impacts discloses that impacts would result from directly and indirectly associated industrial, commercial, and residential development. As indicated by information presented in the 2007 Roan Plateau RMPA/EIS, BLM-authorized oil and gas development in Garfield County represents less than 25% of the total oil and gas development in the County and less than 10% of the total population growth in the County (including both direct and indirect employment). Therefore, the consumptive use of gravel and other resources, including land, to support human population growth in Garfield County is primarily attributable to factors other than oil and gas development in general, to BLM-authorized development in particular, and specifically to the small scale of development represented by the SCMDP.

### **Arnold and Darleen Mackley**

*Comments:*

Adequacy of County Road 329 (Spruce Creek Road) – CR 329 is inadequate for this type of drilling plan.

*Response:* BLM has no authority to force mitigation of impacts to county roads or to improve the county roads. These are in the purview of the Garfield County government through the allocation to road projects of monies derived from royalty payments, taxes, user fees, and other mechanisms.

Visual Resources – We are concerned about the impacts to the SCMDP viewshed from I-70 and adjacent homeowners property.

*Response:* See section 2.11, COA#17 and Site-Specific COAs for concerns related to Visual Resources.

Reclamation -- There have been disturbances in the project area for which scars still remain after 50 years. We are concerned about thin topsoil and poor reclamation potential.

*Response:* The goals, objectives, timelines, measures, and monitoring methods for final reclamation of oil and gas disturbances are described in Appendix I (Surface Reclamation) of the 1998 Draft Supplemental EIS (DSEIS). Specific measures to follow during interim and temporary (pre-interim) reclamation are described in Appendix A (Standard and Site-Specific Conditions of Approval).

Range Management – New roads and pipelines will make it impossible to control cattle on the grazing permits.

*Response:* See the section of the Environmental Assessment titled Range Management and COA #13 for concerns related to range management.

Dust Control – Without mandatory dust control the mountain will be covered in a fog.

*Response:* See Section 1.1 (Air Quality) of the Environmental Assessment and COA # 3 for concerns related to dust control.

Water quality/quantity – We are concerned about the effect of the proposed action on water quality and quantity.

*Response:*

A cemented casing would isolate the wells from water-bearing strata as a means of protecting water quality and quantity. Water quantity would be further protected by trucking in water for drilling and completion operations from offsite surface sources. In addition, as a Condition of Approval for two locations (7-94-S-04 and SR 24-9) Williams will be required to test domestic water wells and springs within a specified distance from their wells (Appendix A, Site-Specific Conditions of Approval).

Private property rights - Roads and pipelines are shown on the project map which traverse Mackley property and for which consent has not been given.

*Response:* Pipelines shown in original map with proposed action were included in error. No pipelines are planned on any private property without the owner's knowledge and consent.

Historical properties – Concern about historical properties in vicinity of proposed project

*Response:* Cultural and geological/paleontological resources were considered by BLM during the SCMDP process, including a requirement for a cultural inventory of all lands and a paleontological inventory of any Class I or Class II lands. Conditions of approval specifically for the protection of cultural and geological/paleontological resources are included in Appendix A of the SCMDP and would be attached to any subsequent authorizations issued pursuant to the EA (e.g., drilling permits).

## **Mike Morgan**

*Comments:*

Adjacent Energy Development – There is a lot of development in the area, specifically Noble Energy Compressor Station, with no input from private landowners.

*Response:* BLM has no jurisdiction over development on private land.

Split Estate – Williams proposed action benefits DOI but does not compensate private landowners for lack of income or property depreciation.

*Response:* When private surface overlies federally-owned minerals (Split Estate), the operator must certify (prior to approval of the drilling permit) that a good faith effort has been made to reach an agreement with the private surface owner. If the surface owner and operator fail to reach an agreement, the operator must file a bond with the BLM for the benefit of the surface owner to cover compensation, such as for reasonable and foreseeable loss of crops and damages to tangible improvements.

Public Access – Williams is able to construct roads that the average individual has no access to.

*Response:* While the majority of new access road proposed in the SCMDP is on private land and will therefore have limited access, any roads currently available to the public will remain open. .

Extent of Development – Limit development south of Section 9.

*Response:* Although individual Applications for Permit to Drill (APDs) can be denied to prevent unnecessary and undue degradation, the BLM cannot deny the right to drill and develop a leasehold.

Utilize an economy of scale to the access from multi-billion dollar companies' profits to the local, non-mineral owners' access. If a 20-inch pipeline, 58 wells, additional roads, etc is okay, then a two-track, 150 foot long road, to the most impacted individuals is not excessive.

*Response:* We are not clear on the intent of the comment.

### **Garfield County Road and Bridge Department**

Jurisdiction – Garfield County shall be involved in all decisions regarding upgrading of all county roads within the SCMDP.

Pipelines – Any pipelines within Garfield County ROW shall be reviewed by Garfield County Road and Bridge Department and permits issued before any work performed.

Dust control – Dust control shall be provided on all County gravel roads in the form of Mag Chloride and shall be provided by the Garfield County contractor.

Travel restrictions – Garfield County Road and Bridge reserves the right to close or restrict travel to protect the integrity of the roads during inclement weather or other unforeseen conditions that could cause a safety issue for users of the road.

Haul routes – All contractors shall be advised of the appropriate haul routes, reduced speed limits and muffler requirements.

Overweight/oversize vehicles – all vehicles hauling equipment and materials for this project shall abide by Garfield County's oversize/overweight permit system.

With the appropriate regulations in place, Garfield County Road and Bridge Department has no objection to the development of the SCMDP.

*Response (to above comments from Garfield County Road and Bridge Department):* BLM acknowledges the authority of Garfield County over its roads and bridges.