



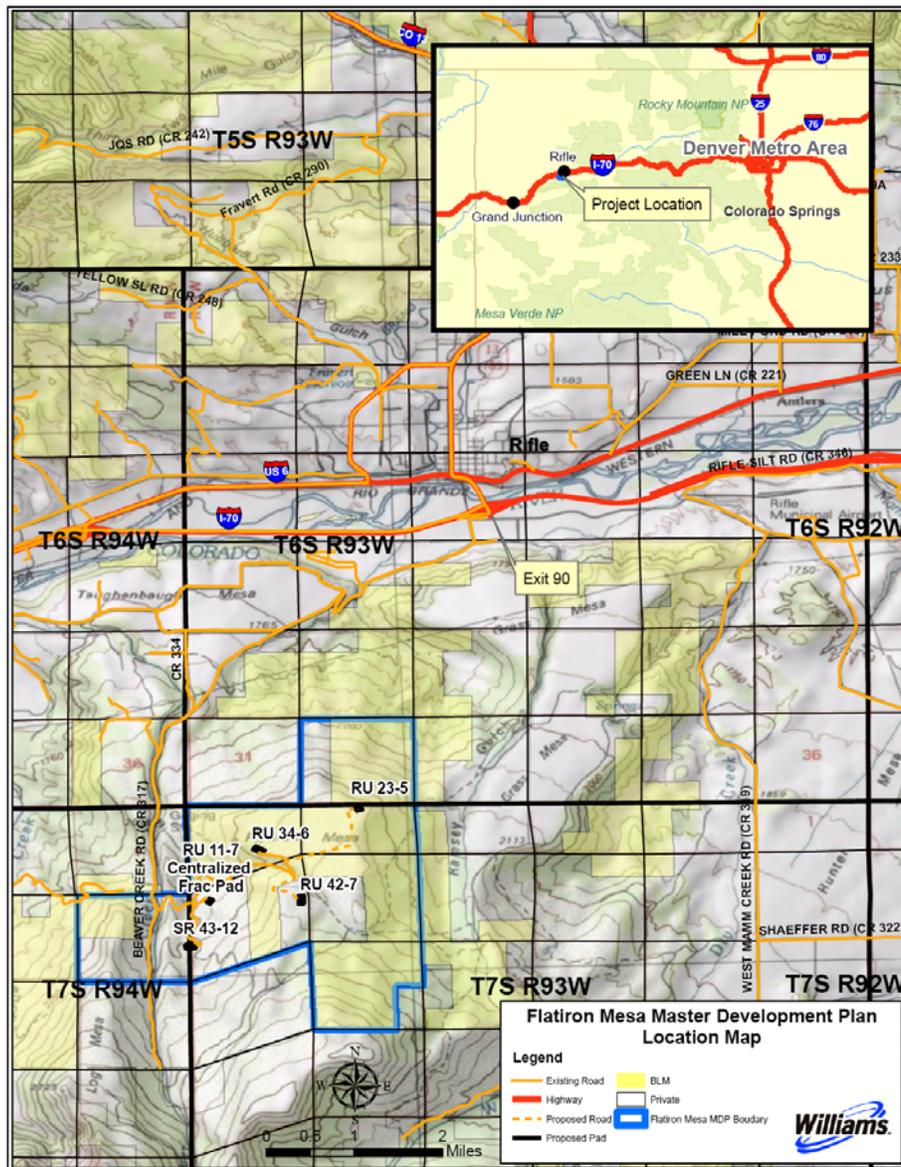
**U. S. Department of the Interior**  
Bureau of Land Management  
Colorado State Office

Glenwood Springs Field Office

December 2009



**Flatiron Mesa Master Development Plan  
for Oil and Gas Exploration and Development  
DOI-BLM-CO-N040-2010-0002-EA**



**Glenwood Springs Field Office  
2300 River Frontage Road  
Silt, Colorado 81652**

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## **EXECUTIVE SUMMARY**

Williams Production RMT Company (Williams) has proposed a 5-year oil and gas development approximately 6 miles southwest of Rifle, Garfield County, Colorado. The proposal, known as the Flatiron Mesa Master Development Plan (FMMDP), covers an area of 3,988 acres in all or part of Sections 5, 6, 7, and 8, Township 7 South (T7S), Range 93 West (R93W) and a portion of Section 12, T7S, R94W, Sixth Principal Meridian. Surface ownership within the FMMDP area consists of 2,677 acres of public lands administered by the BLM, 398 acres of split-estate lands (private surface, Federal minerals), and 912 acres of Fee lands (private surface, private minerals). The private lands are owned by Dr. Youberg, who leases the area for ranching and oil and gas development.

Mineral ownership within the FMMDP area consists of 3,075 acres of Federal oil and gas leases, including 395 acres in Federal lease COC36490 underlying the split-estate land; 1,162 acres in Federal lease COC41916 underlying both public and private lands; and 1,518 acres in Federal lease COC50944 underlying public lands. The remaining area of 913 acres is underlain by private minerals.

The Proposed Action consists of constructing, drilling, completing, and operating up to 93 new wells (81 Federal, 12 Fee) from two new well pads located on private surface, one new well pad on Federal surface, and the expansion of one existing well pad on Federal surface. Two pads on public land in Sections 5 and 6 would access Federal leases COC41916 and COC50944. Two pads on Fee lands in Sections 7, 8, and 12 would access Federal leases COC36490, COC41916, and COC50944 along with Fee minerals. The proposed new wells would be in addition to 13 Fee wells that could be drilled on an existing pad in Section 7, which is not part of the Proposed Action.

Ancillary facilities related to the project that would be constructed or upgraded include access roads, gathering pipelines (operated by Energy Transfer Corporation [ETC], an independent gas-gathering company), a variety of locations for surface production equipment, and a new centralized hydraulic fracturing (“frac”) pad (RU 11-7). As an independent pipeline company (not affiliated with Williams), ETC would apply for and obtain BLM rights-of-way to construct, operate, and maintain the proposed gathering lines analyzed in this Environmental Assessment (EA). For efficiency, this EA also analyzes ETC’s proposed gas-gathering pipeline system associated with the FMMDP.

The FMMDP includes the following actions proposed by Williams:

- Constructing one new well pad (RU 23-5) on BLM land for 44 Federal wells.
- Constructing two new well pads (RU 42-7 and SR 43-12) on private land for 18 Federal wells and 12 Fee wells.
- Expanding one existing well pad (RU 34-6) on BLM land for 19 Federal wells.
- Constructing 1.47 miles of new road to access proposed pads (RU 23-5 and RU 42-7); approximately 0.6 mile of access road would be constructed along the Public Service Company (PSCo) overhead electric powerline right-of-way (COC29423).
- Moving in and rigging up drilling equipment for the four well pads, estimated to require 8 days per pad.
- Conducting drilling and completion operations for approximately 15 days per well.

- Installing production equipment with radiotelemetry capability, primarily consisting of gas meters, storage tanks, and multi-well separator units on the four well pads.
- Constructing one new centralized frac pad (RU 11-7) on private land to support all well completion work on the surrounding four well pads.
- Installing 3.3 miles of temporary surface water pipelines from the centralized RU 11-7 frac pad to support the well completion work planned on the four well pads.
- Reclaiming the pipelines and temporarily disturbed areas along access roads.
- Reclaiming as much of each pad as possible once completion operations have ceased while retaining sufficient pad area to support ongoing production and maintenance.
- Implementing final reclamation of the well pads and roads, consistent with BLM requirements and wishes of the private landowner, when the wells are taken out of production at the end of their lives (“plugging and abandonment”).

In addition to these actions are the following developments to be implemented by ETC, the gas-gathering company:

- Installing 1.66 miles of maximum 12-inch diameter buried steel natural gas pipeline from ETC’s existing main trunk line valve connection along County Road (CR) 317 to a gathering point for the new system in Section 6 for the RU 23-5, RU 34-6, and RU 42-7 pads. The 12-inch diameter pipeline would be installed adjacent to an existing ETC gathering line located alongside the existing lease road. Adding a new pipeline within an existing pipeline corridor is known as “looping” when both pipelines are serving the same wells. When a pipeline is looped, the short-term disturbance would extend 40 feet from the edge of the existing road.
- Installing 0.66 mile of maximum 8-inch diameter buried steel natural gas pipeline from the existing RU 13-7 pad to the connection point with the looped 12-inch pipeline described above. The 8-inch pipeline, serving the proposed wells on the SR 43-12 pad and RU 13-7 pad, would be installed or “looped” adjacent to an existing ETC gathering line located alongside the existing RU 13-7 access road. The short-term disturbance associated with the looped pipeline would extend 40 feet from the edge of the existing road.
- Installing 1.81 miles of maximum 12-inch diameter buried steel natural gas pipeline from the new system gathering point in Section 6 to the proposed RU 23-5 pad. This line would be buried alongside a portion of the existing lease road and alongside the proposed road to the RU 23-5 pad. The maximum disturbance width along the new road and pipeline corridor would be 65 feet, with 40 feet attributed to the new pipeline work.
- Installing 0.24 mile of maximum 8-inch diameter buried steel natural gas pipeline alongside the existing RU 34-6 access road in a new pipeline corridor. The maximum disturbance width along the new pipeline corridor would be 40 feet from the edge of the existing road. The existing 3-inch surface pipeline (0.20 mile) presently serving the RU 34-6 well would be decommissioned, severed in removable segments, and hauled from public land.
- Installing 0.27 mile of maximum 12-inch diameter buried steel natural gas pipeline to serve the proposed RU 42-7 pad. The pipeline would be buried directly north from the pad to the intersection of the pad access road, then east down the access road to the old jeep trail, and north

on the jeep trail alignment until it intersects the main Flatiron Mesa Road. The pipeline would have a 50-foot-wide disturbance corridor where it leaves the pad and along the jeep trail alignment. The section of pipeline along the RU 42-7 access road would be installed within a 65-foot-wide disturbance corridor.

The FMMDP area is accessible from Rifle, Colorado, by traveling southwest on CR320 (Rifle-Rulison Road) and CR317 (Beaver Creek Road), then east on a private lease road in the Beaver Creek Drainage. Public access would not be allowed within the FMMDP area, since access roads to the area cross private lands.

Existing field-development roads provide vehicle access to the existing pads in Sections 6 and 7. New roads would be constructed by Williams on Flatiron Mesa to access the two pads in Sections 5 and 8. The proposed road construction would result in 1.47 miles of new access roads with a 20-foot running surface to safely accommodate traffic in both directions. The pipelines serving the four well pads would be installed and buried by ETC within existing pipeline corridors in Sections 6, 7, and 12 or in a new pipeline corridor established alongside the proposed roads in Sections 5, 6, and 8. The total length of proposed natural gas pipeline construction by ETC would be 4.64 miles.

The BLM Field Manager is responsible for:

- Decisions affecting Federal wells on proposed pads RU 23-6, RU 34-6, RU 42-7, and SR 43-12 and the associated pad layout, surface facilities, access road, and pipelines. Although the RU 11-7 frac pad and satellite surface frac pipelines would be constructed and operated on private surface, the remote well completion operations would support the Federal wells with the project area and are considered a “connected action” for the purposes of this EA.
- Enforcement of lease stipulations for Federal leases COC41916 and COC50944, surface-use and downhole Conditions of Approval (COAs) for Federal wells, and stipulations for the issuance by BLM of any rights-of-way to access private minerals across or from Federal land.

The COAs to be attached by BLM to individual Applications for Permit to Drill (APDs) for Federal wells and the stipulations to be attached by BLM as terms and conditions for issuance of rights-of-way across Federal land are presented in Appendices B and C, respectively, of this EA. A Master Drilling Plan and Surface Plan of Operations would be submitted by Williams during the APD permitting process.

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**FONSI**  
**DOI-BLM-CO-N040-2010-0002-EA**

The USDI Bureau of Land Management (BLM) has reviewed the attached Environmental Assessment (EA) of the Flatiron Mesa Master Development Plan (FMMDP) for oil and gas exploration and development proposed by Williams Production RMT Company and Energy Transfer Corporation. The project design and approved mitigation measures result in a Finding of No Significant Impact on the human environment for the Proposed Action. Therefore, an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) is not necessary to analyze the impacts further.

**DECISION RECORD**

**DECISION:** It is my decision to approve the Proposed Action of the Flatiron Mesa Master Development Plan involving two new well pads (RU 42-7 and SR 43-12) on private surface in Sections 7, 8, and 12; one new well pad (RU 23-5) on Federal surface in Section 5; one existing well pad (RU 34-6) on Federal surface in Section 6; and 4.64 miles of buried natural gas pipelines.

**RATIONALE:**

1. This decision will provide for the orderly, economical, and environmentally sound exploration and development of oil and gas resources associated with valid Federal oil and gas leases.
2. This decision does not authorize the initiation of drilling of Federal wells or the construction of well pads, roads, pipelines, or other surface facilities on BLM lands for the purpose of accessing either Federal or private mineral estates. Drilling of Federal wells or construction of surface facilities on Federal lands will occur only upon approval by BLM of Applications for Permits to Drill or issuance by BLM of right-of-way grants for the use of Federal lands to access or convey Fee minerals.

**MITIGATION:** Environmental impacts will be avoided, minimized, or mitigated by the following:

- Project design and implementation measures incorporated into the Proposed Action.
- A Timing Limitation (TL) stipulation attached to Federal lease COC41916 prohibiting construction, drilling, and completion activities in Section 5 from January 16 through April 29 of each year to protect winter habitat use by big game.
- No Surface Occupancy (NSO) stipulations attached to Federal lease COC41916 prohibiting long-term ground-disturbing activities in the City of Rifle's municipal watershed without issuance of a special use permit from the City of Rifle (such permits have been obtained by Williams and ETC, an independent natural gas pipeline company).
- A variety of surface-use and downhole Conditions of Approval (COAs) attached by BLM to activities associated with the Proposed Action.

**NAME OF PREPARER:** Jim Byers, Natural Resource Specialist, Project Lead

**SIGNATURE OF AUTHORIZED OFFICIAL:**

  
\_\_\_\_\_  
Authorized Officer

12-14-09  
\_\_\_\_\_  
Date

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# FLATIRON MESA MASTER DEVELOPMENT PLAN FOR OIL AND GAS EXPLORATION AND DEVELOPMENT

## INTRODUCTION

This Environmental Assessment (EA) has been prepared by the Bureau of Land Management (BLM), Glenwood Springs Field Office (GSFO), to analyze and disclose impacts associated with a proposal by Williams Production RMT Company (Williams) for a 5-year program of oil and gas exploration and development on public, split-estate, and private lands approximately 6 miles southwest of the town of Rifle, Garfield County, Colorado. This proposal, referred to as the Flatiron Mesa Master Development Plan (FMMDP), covers portions of Sections 5, 6, 7, and 8, Township 7 South (T7S), Range 93 West (R93W), Sixth Principal Meridian, and a portion of Section 12, T7S, R94W. The FMMDP area is accessible from Rifle, Colorado, by traveling southwest on Garfield County Roads (CR) 320 (Rifle-Rulison Road) and CR317 (Beaver Creek Road), then east on a private lease road in the Beaver Creek Drainage. The project location is shown by the map on the cover of this EA.

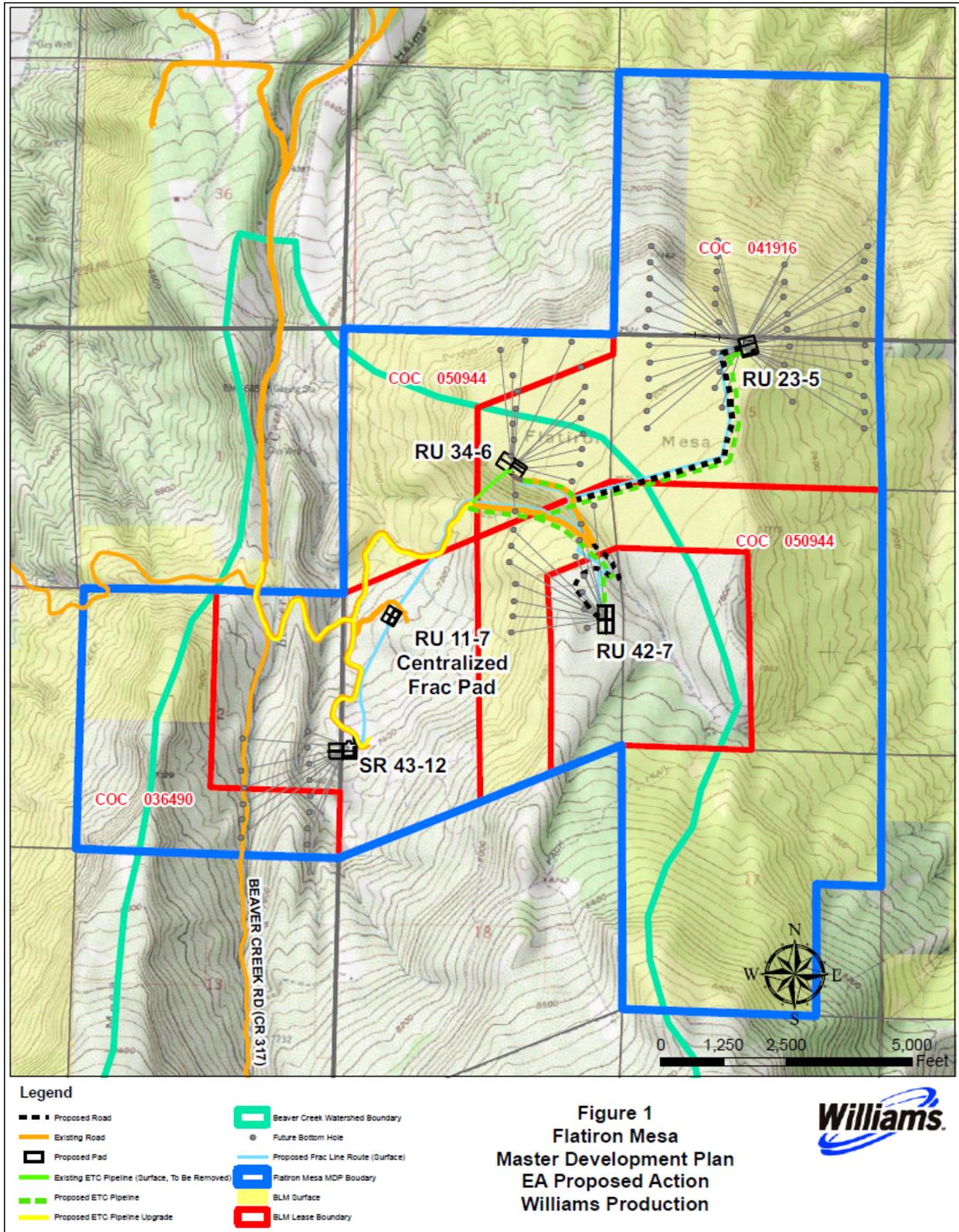
The FMMDP area comprises a total of 3,988 acres, including 2,677 acres of Federal surface administered by BLM and underlain by Federal mineral estate, 398 acres of split-estate land consisting of private surface and Federal minerals, and 913 acres of private land underlain by private minerals (Fee land). Public access would not be allowed within the FMMDP area, since access roads to the area cross private lands.

The proposal consists of constructing, drilling, completing, and operating up to 93 wells from one new Federal well pad (RU 23-5), one existing Federal well pad (RU 34-6), and two new Fee well pads (RU 42-7 and SR 43-12) on private surface owned by Dr. Youberg. Federal wells located on the Fee pad would access Federal minerals by drilling directionally. An additional 13 Fee wells may be drilled and operated from an existing well pad (RU 13-7) on Youberg property, although the approval authority for these APDs would rest with the Colorado Oil and Gas Conservation Commission (COGCC). Ancillary facilities related to the project would include variety of surface production equipment on the well pads, a centralized pad (RU 11-7) to support hydraulic fracturing (fracing) operations on the well pads, new or upgraded access roads, and a system of gas-gathering pipelines operated by ETC. **Figure 1** shows the location of the proposed pads and downhole targets for Federal wells.

The FMMDP also includes measures to avoid, minimize, or mitigate environmental impacts to surface and downhole resources potentially resulting for the approval of Applications for Permit to Drill (APDs) for Federal wells and the granting of rights-of-way across Federal lands. The system of gas-gathering pipelines to be built and operated by ETC is also addressed in this EA.

## PURPOSE AND NEED FOR THE ACTION

Exploration and development of Federal mineral resources by private entities is an integral part of the Federal Government's national energy policy through the *National Energy Policy Act of 2005*, which implements policy for "dependable, affordable, and environmentally sound production and distribution of energy." BLM is authorized to lease Federal lands for oil and gas development under the 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*. Other relevant guidance is provided in BLM Handbook H-3150 (Rel. 3-289 6/7/94).



O:\Projects\PIC\Rulison\09\0211 Flatiron Mesa MDP\Figure 1 v2.mxd mreynold 10/9/2009 8:25:08 AM

Figure 1. Proposed Action.

The purpose of the action is to explore and develop oil and gas resources on Federal leases COC036490, COC041916, and COC050944 consistent with existing Federal lease rights. Leaseholders retain rights to drill, extract, remove, and market gas products. National mineral leasing policies and the regulations by which they are enforced recognize the statutory right of leaseholders 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 leaseholder 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 Federal leaseholder, Williams, to determine through oil and gas exploration if, and where, additional development and production is feasible.

The purpose and need for the action could 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 (RMP), in addition to more recent BLM policy, specifies the use of multiple well development plans as a means to more effectively manage Federal lease development (BLM 1999a).

### PROPOSED ACTION

The FMMDP 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 93 downhole locations drilled over the course of 5 years (2010 through 2014) at four surface locations, including one existing well pad to be expanded and three new well pads to be constructed (**Figure 1** and **Table 1**). The total number of wells drilled would depend largely on factors out of Williams’s control, such as geologic success, engineering technology, economic factors, and availability of commodity markets. Implementation of the full drilling schedule proposed is anticipated to take 5 years; however, potential timing limitations, rig availability, and natural gas prices (economics) may extend this timeline.

**Table 1. Locations of Leases, Well Pads, Well Surface Facilities, and Bottomhole Targets**

Pad Name	Lease	Proposed Wells	Surface Location	Bottomhole Location
<b>RU 23-5</b> (proposed)	COC041916	NER 433-32	E/2 NW Sec. 5 T7S R93W	NWSE Sec. 32 T6S R 93W
		NER 533-32		NWSE Sec. 32 T6S R 93W
		NER 34-32		SWSE Sec. 32 T6S R 93W
		NER 334-32		SWSE Sec. 32 T6S R 93W
		NER 434-32		SWSE Sec. 32 T6S R 93W
		NER 534-32		SWSE Sec. 32 T6S R 93W
		RU 31-5		NWNE Sec. 5 T7S R93W
		RU 331-5		NWNE Sec. 5 T7S R93W
		RU 32-5		SWNE Sec. 5 T7S R93W
		RU 332-5		SWNE Sec. 5 T7S R93W
		RU 43-5		NESE Sec. 5 T7S R93W
		RU 342-5		SENE Sec. 5 T7S R93W
		RU 42-5		SENE Sec. 5 T7S R93W
		RU 441-5		E/2 NW Sec. 5 T7S R93W
		RU 341-5	NENE Sec. 5 T7S R93W	
		RU 41-5	NENE Sec. 5 T7S R93W	
		NER 444-32	SESE Sec. 32 T6S R93W	
		NER 344-32	SESE Sec. 32 T6s R93W	

Pad Name	Lease	Proposed Wells	Surface Location	Bottomhole Location
<b>RU 23-5</b> (proposed) (continued)	COC041916	NER 44-32	E/2 NW Sec. 5 T7S R93W	SESE Sec. 32 T6S R 93W
		NER 543-32		NESE Sec. 32 T6S R 93W
		NER 443-32		NESE Sec. 32 T6S R 93W
		NER 343-32		NESE Sec. 32 T6S R 93W
		NER 413-32		NWNE Sec. 32 T6S R 93W
		NER 513-32		NWNE Sec. 32 T6S R 93W
		NER 14-32		NENE Sec. 32 T6S R 93W
		NER 314-32		NENE Sec. 32 T6S R 93W
		NER 414-32		NENE Sec. 32 T6S R 93W
		NER 514-32		NENE Sec. 32 T6S R 93W
		RU 11-5		NWNW Sec. 5 T7S R93W
		RU 311-5		NWNW Sec. 5 T7S R93W
		RU 12-5		SWNW Sec. 5 T7S R93W
		RU 312-5		SWNW Sec. 5 T7S R93W
		RU 13-5		NWSW Sec. 5 T7S R93W
		RU 313-5		NWSW Sec. 5 T7S R93W
		RU 322-5		SENE Sec. 5 T7S R93W
		RU 22-5		SENE Sec. 5 T7S R93W
		RU 321-5		NENE Sec. 5 T7S R93W
		RU 21-5		NENE Sec. 5 T7S R93W
		NER 524-32		SESE Sec. 32 T6S R 93W
		NER 424-32		SESE Sec. 32 T6S R 93W
		NER 324-32		SESE Sec. 32 T6S R 93W
		NER 24-32		SESE Sec. 32 T6S R 93W
NER 523-32	NENE Sec. 32 T6S R 93W			
NER 423-32	NENE Sec. 32 T6S R 93W			
<b>RU 34-6</b> (existing)	COC50944	RU 332-6	NWSE Section 6 T7S R93W	SWNE Sec. 6 T7S R93W
		RU 32-6		SWNE Sec. 6 T7S R93W
		RU 432-6		SWNE Sec. 6 T7S R93W
		RU 532-6		SWNE Sec. 6 T7S R93W
	COC41916	RU 533-6		NWSE Sec. 6 T7S R93W
		RU 33-6		NWSE Sec. 6 T7S R93W
		RU 333-6		NWSE Sec. 6 T7S R93W
		RU 433-6		NWSE Sec. 6 T7S R93W
		RU 434-6		SWSE Sec. 6 T7S R93W
		RU 334-6		SWSE Sec. 6 T7S R93W
		RU 544-6		SESE Sec. 6 T7S R93W
		RU 344-6		SESE Sec. 6 T7S R93W
		RU 44-6		SESE Sec. 6 T7S R93W
		RU 444-6		SESE Sec. 6 T7S R93W
		RU 343-6		NESE Sec. 6 T7S R93W
		RU 43-6		NESE Sec. 6 T7S R93W
		RU 443-6		NESE Sec. 6 T7S R93W
		RU 543-6		NESE Sec. 6 T7S R93W
		RU 42-6		SENE Sec. 6 T7S R93W

Pad Name	Lease	Proposed Wells	Surface Location	Bottomhole Location
<b>RU 42-7</b> (proposed)	COC50944	RU 531-7	SENE Sec. 7 T7S R93W	NWNE Sec. 7 T7S R93W
		RU 31-7		NWNE Sec. 7 T7S R93W
		RU 32-7		SWNE Sec. 7 T7S R93W
		RU 331-7		NWNE Sec. 7 T7S R93W
		RU 332-7		SWNE Sec. 7 T7S R93W
		RU 341-7		NENE Sec. 7 T7S R93W
		RU 41-7		NENE Sec. 7 T7S R93W
		RU 431-7		NWNE Sec. 7 T7S R93W
		RU 432-7		SWNE Sec. 7 T7S R93W
		RU 441-7		NENE Sec. 7 T7S R93W
		RU 541-7		NENE Sec. 7 T7S R93W
	Fee Lease	RU 342-7		SENE Sec. 7 T7S R93W
		RU 42-7		SENE Sec. 7 T7S R93W
		RU 442-7		SENE Sec. 7 T7S R93W
		RU 542-7		SENE Sec. 7 T7S R93W
				SENE Sec. 7 T7S R93W
<b>SR 43-12</b> (proposed)	COC036490	SR 334-12	NWSE Sec. 7 T7R 93W  NESE Section 12 T7S R94W	SWSE Sec. 12 T7S R94W
		SR 34-12		SWSE Sec. 12 T7S R94W
		SR 344-12		SESE Sec. 12 T7S R94W
		SR 44-12		SESE Sec. 12 T7S R94W
		SR 444-12		SESE Sec. 12 T7S R94W
		SR 534-12		SWSE Sec. 12 T7S R94W
		SR 544-12		SESE Sec. 12 T7S R94W
	Fee Lease	SR 33-12		NWSE Sec. 12 T7S R94W
		SR 333-12		NWSE Sec. 12 T7S R94W
		SR 343-12		NESE Sec. 12 T7S R94W
		SR 43-12		NESE Sec. 12 T7S R94W
		SR 433-12		NWSE Sec. 12 T7S R94W
		SR 443-12		NESE Sec. 12 T7S R94W
		SR 533-12		NWSE Sec. 12 T7S R94W
		SR 543-12		NESE Sec. 12 T7S R94W
				NESE Sec. 12 T7S R94W

Full development of the Proposed Action would 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 FMMDP or in offsite areas accessed by directional drilling techniques from pads in the FMMDP—due to alterations in downhole spacing orders or changes in environmental, economic, or technological conditions.

In light of these factors, Williams could implement all or any combination of the following developments (**Figure 1**):

- Constructing 1.47 miles of road to access two proposed pads (RU 23-5 and RU 42-7). Approximately 0.6 mile of access road to the proposed RU 23-5 pad would be constructed along the Public Service Company (PSCo) overhead electric powerline right-of-way (COC29423).
- Moving in and rigging up drilling equipment for the four well pads – 8 days per pad.

- Conducting drilling and completion operations for approximately 15 days per well.
- Constructing one new centralized frac pad (RU 11-7) on private land to support all well completion work on the surrounding four well pads.
- Installing 3.3 miles of temporary surface water lines from the centralized RU 11-7 frac pad to support the well completion work planned on the four well pads.
- Installing production equipment with radio telemetry capability, primarily consisting of gas meters, storage tanks, and multi-well separator units on the four well pads.
- Reclaiming as much of each pad as possible once completion operations have ceased.

The gas-gathering company ETC would implement all or any combination of the following (**Figure 1**):

- Installing 1.66 miles of maximum 12-inch diameter buried steel natural gas pipeline from ETC's existing main trunk line valve connection along CR317 to a new system gathering point in Section 6 for the RU 23-5, RU 34-6, and RU 42-7 pads. The 12-inch diameter pipeline would be installed directly adjacent to an existing ETC gathering line located alongside the existing lease road (shown as "Proposed ETC Pipeline Upgrade on **Figure 1**"). Adding a new pipeline within an existing pipeline corridor is known as "looping" when both pipelines are serving the same wells. When a pipeline is "looped," the short-term disturbance width would extend 40 feet from the edge of the existing road. This 12-inch pipeline upgrade is listed under RU 34-6 entry in **Table 3**.
- Installing 0.66 mile of maximum 8-inch diameter buried steel natural gas pipeline from the existing RU 13-7 pad to the connection point with the looped 12-inch pipeline described above. The 8-inch pipeline serving the proposed wells on the SR 43-12 pad and RU 13-7 pad, would be installed or "looped" directly adjacent to an existing ETC gathering line which is located alongside the existing RU 13-7 access road. When a pipeline is looped, the short-term disturbance would extend 40 feet from the edge of the existing road.
- Installing 1.81 miles of maximum 12-inch diameter buried steel natural gas pipeline from the new system gathering point in Section 6 to the proposed RU 23-5 pad. This line would be buried alongside a portion of the existing lease road and alongside the proposed road to the RU 23-5 pad. The maximum disturbance width along the new road and pipeline corridor would be 65 feet, with 40 feet attributed to the new pipeline corridor work.
- Installing 0.24 miles of maximum 8-inch diameter buried steel natural gas pipeline alongside the existing RU 34-6 access road in a new pipeline corridor. The maximum disturbance width along the new pipeline corridor would be 40 feet from the edge of the existing road. The existing 3-inch surface pipeline (0.20 mile) presently serving the RU 34-6 well would be decommissioned, severed in removable segments, and hauled from public land.
- Installing 0.27 mile of maximum 12-inch diameter buried steel natural gas pipeline to serve the proposed RU 42-7 pad. The pipeline would be buried directly north from the pad to the intersection of the pad access road, then east down the access road to the old jeep trail, and north on the jeep trail alignment until it intersects the main Flatiron Mesa Road. The pipeline would have a 50-foot wide disturbance corridor where it leaves the pad and along the jeep trail alignment. The section of pipeline that would be installed along the RU 42-7 access road would occur within a 65-foot disturbance corridor.

A portion of the Proposed Action would occur within the City of Rifle municipal watershed—including the expansion of the existing RU 34-6 pad, construction of the RU 42-7 pad and access road, construction

of the SR 43-12 pad and access road, and construction of the RU 11-7 centralized frac pad. Additionally, Williams would construct a portion of the RU 23-5 access road within the municipal watershed boundary (**Figure 1**). ETC would install buried gas-gathering lines to serve all of the proposed pads (except the RU 11-7 frac pad) and would remove the existing surface gas line that presently serves the RU 34-6 pad. Both Williams and ETC have obtained the necessary permits and authorization from the City of Rifle to conduct the proposed work and develop appropriate measures to mitigate impacts to the domestic watershed area. Consultation would occur between the operators, BLM, and the City of Rifle to ensure that the Proposed Action and its best management practices would protect the water quality parameters of the watershed.

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 (2) a **development phase**.

### **EXPLORATION PHASE: CONVENTIONAL DRILLING**

Conventional rigs, in general designed to drill one to eight wells per 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 less costly to move.

The primary objective of the proposed exploratory drilling is to evaluate the following aspects of gas development in the FMMDP 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 targets for economic gas production

### **DEVELOPMENT PHASE: EFFICIENCY DRILLING**

The development phase would utilize efficiency drilling rigs, which incorporate offshore drilling methods. This technology allows drilling of multiple wells (up to 22 wells per cellar and the possibility of two cellars on a pad) 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 pipelines to drill additional wells.
- Reduces overall traffic during completion operations due to the centralized frac pad component.
- Eliminates the need to reclaim and later re-disturb 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.

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.

The life of the project in its entirety could extend up to 35 years, which is the estimated productive life of a natural gas well completed in the Wasatch and Mesaverde Formations in the Piceance Basin.

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, the pads located on BLM surface were located and designed to minimize surface disturbance impacts to sensitive plant habitat on Flatiron Mesa.

Although not a component of the Proposed Action, the existing RU 13-7 pad has one producing well operating under Colorado Oil and Gas Conservation Commission (COGCC) authority since the pad is located on Fee land with both private (Youberg) surface and underlying private mineral lease. No Federal bottomholes are planned for this location. For inclusion in the cumulative impact analysis section of the EA, Williams anticipates the drilling of 13 additional Fee wells from this site during the FMMDP project life, involving the expansion of the existing pad to accommodate the planned drilling. No additional road or pipeline work would be necessary to drill the Fee wells from the RU 13-7 pad. COGCC would be the responsible agency to review and approve the APDs for these Fee wells.

**Table 2** presents the overall plan for well development, specifically identifying the number of wells to be drilled by year for the exploration phase and the full development phase. It is important to recognize that the efficiency drilling conducted in one rig visit would involve year-round drilling to accomplish the development phase in the shortest time possible. For example, the well drilling planned for the RU 23-5 pad would commence in the second half of 2011 and continue until the first half of 2013 to drill the 40 wells slated for efficiency drilling. It should be noted that during 2011-2013, efficiency drilling would be planned on the RU 23-5, RU 34-6, and RU 42-7, with three rigs drilling during that period. All pads would be clustered within a 1-mile diameter circle. To accomplish the plan for clustered development listed in **Table 2**, the operator would need an exception to the lease timing limitation that protects big game winter habitat.

**Table 2. Projected Drilling Schedule for Phased Exploration and Development**

Well Pad	Section	Wells Drilled Per Year				
		2010	2011	2012	2013	2014
RU 23-5	5	4 wells <sup>1</sup>	8 wells <sup>2</sup>	21 wells <sup>2</sup>	11 wells <sup>2</sup>	
RU 34-6	6	4 wells <sup>1</sup>	10 wells <sup>2</sup>	5 wells <sup>2</sup>		
RU 42-7	7		4 wells <sup>1</sup>	11 wells <sup>2</sup>		
SR 43-12	7 and 12	4 wells <sup>1</sup>			4 wells <sup>2</sup>	7 wells <sup>2</sup>
<b>Number of Wells Drilled per Year</b>		12 wells	22 wells	37 wells	15 wells	7 wells <sup>2</sup>
<sup>1</sup> Exploratory phase using conventional well drilling. <sup>2</sup> Development phase using efficiency drilling.						

**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 total disturbance for pads, roads, and pipelines, including short-term disturbance subject to prompt or interim reclamation and long-term disturbance that would extend throughout the productive life of the oil and gas wells (up to 35 years).

**Figure 1** depicts the location of project components.

**Table 3. Disturbance Associated with Proposed Well Pads, Access Roads, and Pipelines**

Well Pad	Mineral Lease	Short-term Disturbance (acres)				Road and Pipeline Lengths (miles)		Long-term Disturbance (acres)	
		Pads	Roads	Pipelines	Total	Roads	Pipelines	Pads	Roads
RU 23-5 New	COC41916	5.30	3.03	8.78	17.11	1.00	1.81	2.36	3.03
RU 34-6 Existing	COC41916/ COC50944	5.30	--	9.21	14.51	--	1.90 <u>1/</u>	1.47	--
RU 42-7 New	COC50944/ Fee Lease	5.50	2.0	1.64	9.14	0.47	0.27	1.46	1.42
SR 43-12 New	COC36490/ Fee Lease	5.60	--	3.21	8.81	--	0.66	1.46	--
New 11-7 Frac Pad	Fee Lease	2.80	--	0.84	3.64	--	0.58 <u>2/</u>	--	--
RU 34-6 Gas Line Removal	COC50944	--	--	--	--	--	0.20	--	--
<b>Subtotals</b>		<b>24.50</b>	<b>5.03</b>	<b>23.68</b>				<b>6.75</b>	<b>5.45</b>
<b>TOTALS</b>		<b>53.21</b>				<b>1.47</b>	<b>5.42</b>	<b>11.20</b>	

1/ Includes 0.24 mile of 8-inch pipeline along pad access road to replace the surface pipeline to be removed and 1.66 miles of 12-inch pipeline upgrade from CR317 to system gathering point in Section 6.

2/ Of the 3.3 miles of surface lines planned to support the remote completion work, 0.58 mile would involve new disturbance (12-foot average width) where lines would be laid cross-country and not along existing roads or pipeline corridors.

Short-term Disturbance Assumptions:

WELL PAD – The perimeter of the total pad disturbance was calculated on survey plats.

ROAD – The average road-disturbance corridor is 35 feet in width.

PIPELINE – A pipeline buried in its own corridor would have an estimated disturbance width of 50 feet. When a pipeline is buried alongside a new or existing road, the short-term disturbance width of the road and pipeline corridor would be 65 feet, of which 40 feet is attributed to the pipeline. When a pipeline is “looped” or a new line is added to an existing pipeline corridor, the short-term disturbance width would extend 40 feet from the edge of the existing road, with a portion of the existing road to be used for construction.

Long-term Disturbance Assumptions:

WELL PAD - The long-term disturbance of the “working” area of each pad is based on survey plats.

ROAD - Long-term disturbance width for the proposed roads is estimated at 25 feet (including ditches).

PIPELINE – The entire pipeline disturbance area would be reclaimed and therefore is included a long-term disturbance.

*The disturbance areas for proposed pads and roads were provided by Bookcliff Survey Services, Inc, Rifle, CO.*

*Disturbance areas for proposed pipelines were provided by ETC, Englewood, CO.*

Total short-term disturbance of the proposed pads, including the RU 11-7 centralized frac facility, would be 24.5 acres, reduced to a long-term footprint of 6.75 acres under the assumption that the RU 11-7 frac pad would be totally reclaimed after well completions were finished. Approximately 5.03 acres would be attributed to road construction in the short term, with a long-term disturbance estimate of 4.45 acres.

Short-term disturbance related to the buried pipelines installed by ETC and portions of the surface frac lines installed cross-country by Williams would be 23.68 acres. Pipeline disturbances would be reclaimed shortly after installation, nullifying the need for any long-term disturbance estimate.

Each major element of the proposal is described below under the headings Construction Operations, Drilling Operations, and Completion Operations, Production (Operation and Maintenance), ETC's Gas Gathering Plans, Best Management Practices, Design Features, and Mitigation Measures. For the FMMDP, Williams has chosen to submit the required Surface Use Plan of Operations at the time of APD submittal. Williams has submitted the Master 10-Point Drilling Plan to the BLM Petroleum Engineer, Glenwood Springs Field Office.

## **CONSTRUCTION OPERATIONS**

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

Flatiron Mesa area is accessible from Rifle, Colorado, by traveling approximately 5 to 6 miles southwest on CR320 and CR317, then east on a private lease road out of the Beaver Creek Drainage. The road system in the FMMDP area under the Proposed Action is presented in **Figure 1** and **Table 3**. To the extent feasible, existing access roads would be used to access the existing RU 34-6 pad, proposed 43-12 pad, and the proposed RU 11-17 centralized frac pad. Williams proposes to construct approximately 1.47 miles of new road to access the proposed RU 23-5 and 42-7 pads.

New road construction would occur within an average 35-foot-wide disturbance corridor. Access roads would have a 20-foot running surface with additional width needed for cuts and fills, turnouts, and ditches. Standard maximum grade could be 12% for minimal distances, but preferably would be 10% or less. State and County 2% crown design, as well as a BLM requirement for 24-inch diameter culverts, would be met. Major cuts and fills would be laid back to 1.5:1 slopes and surface materials, where necessary, would be comprised of gravel road base.

Short-term disturbance for the proposed road construction would be 5.03 acres. Long-term disturbance attributed to road construction would be 4.45 acres, using a 25-foot road width, including ditches (**Table 3**).

Timing of roadwork would be dependent upon the drilling schedule (**Table 2**); roads would be constructed as needed to access well pads for drilling. For the Flatiron Mesa area as a whole, all road construction would occur during the first 2 years of exploration.

Where the results of exploration warrant initiation of the development phase, the road system used during the exploration phase would also be adequate for the development phase; no additional roadwork would be required when moving from the exploration phase to the development phase to access a given 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 the BLM reclamation COA (Appendix B).

**Estimates of Traffic and Workforce**

Estimated traffic requirements for drilling and completion operations are shown in **Table 4** for the exploration phase (16 wells) and in **Table 5** for the development phase (77 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 4. Traffic Estimates for 16 Wells during the Exploration Phase**

Trip Type	Round-Trip Frequency
<b>Drilling</b>	
<b>1 conventional drilling rig, 4 well pads, 16 wells, 15 days per well, 240 days total</b>	
Drilling rig crews (1 rig, 2 crews/rig)	2 /day
Conventional drilling rig move	10 /pad
Drill bit/tool delivery	6 /biweekly
Mechanics/Welders	4 /week
Supply delivery	4 /week
Fresh water truck	3 /day
Fuel trucks	5 /week
Wireline unit	2 /well
Cement trucks and crew	12 /well
<b>Subtotal</b>	<b>2,314 trips in 240 days</b>
<b>Completion</b>	
<b>1 rig, 4 well pads, 16 wells, 9 days per well, 144 days total</b>	
Service rig (or coiled tubing unit or snubbing unit)	4 /well
Service rig crew	1 /day
Wireline unit	6 /well
Consultant	2 /day
Frac/produced water trucks	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>3,704 trips in 144 days</b>
<b>TOTAL</b>	<b>6,018</b>

Estimates presented in **Table 4** are based on the following:

- Four trucks and a crane would be required to move each rig to and from each well pad within the Flatiron Mesa area. 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 Flatiron Mesa area.

- Williams contracts with trucking companies that have their own legal sources of water to provide fresh water for drilling purposes and dust control.
- 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.
- On average, a well would require 4,000 barrels of water for each fracture stimulation stage, with as many as seven stages per well. This water is supplied by Williams's 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% 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% replenishment rate and subsequent trucking of water off the pad once the wells are fully completed.

**Table 5. Traffic Estimates for 77 Wells during the Production Phase**

<b>Trip Type</b>	<b>Round-Trip Frequency</b>
<b>Drilling</b>	
<b>1 efficiency drilling rig, 4 well pads, 77 wells, 15 days per well, 1,155 days total</b>	
Rig crews (1 rig, 2 crews/rig)	2 /day
Efficiency drilling rig move	16 /pad
Drill bit/tool delivery	3 /week
Mechanics	4 /week
Supply delivery	4 /week
Fresh water truck	3 /day
Fuel trucks	3 /week
Wireline unit	2 /well
Cement trucks and crew	12 /well
<b>Subtotal</b>	<b>9,227 trips in 1,155 days</b>
<b>Completion on remote frac site</b>	
<b>4 pads, 77 wells, 9 days per well, 693 days total</b>	
Frac/produced water trucks	160 to remote frac site/well
	0 to well pad
Pump trucks	6 to remote frac site/well
	0 to well pad
Sand trucks	6 to remote frac site/well
	0 to well pad
Equipment trucks (frac tanks)	32 to remote frac site/well
	0 to well pad
Testing and operations	0 to remote frac site
	2 to well pad/day
<b>Subtotal</b>	<b>21,252 trips in 693 days</b>
<b>TOTAL</b>	<b>30,479</b>

Estimates presented in **Table 5** are based on same information as presented in **Table 4** for the production phase, except as follows:

- Eight trucks (instead of four) and a crane would be required to move an efficiency rig to and from each well pad within the Flatiron Mesa 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 Flatiron Mesa area.
- It is assumed that a water replenishment system would be in place.

### **PAD DESIGN, PAD CONSTRUCTION, INTERIM RECLAMATION, AND FINAL ABANDONMENT**

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

- Well pads would consist of wellheads, one separator per well, one or more condensate tanks per mineral interest, two or more water tanks, and temporary completion equipment (flowback units and tanks).
- The frac pad would consist of sufficient space to temporarily accommodate equipment required to perform remote fracture stimulation services.
- ETC would minimize meter boxes installed as much as possible by utilizing multiple run meter boxes capable of handling multiple wells.

Williams proposes to construct three new well pads and expand one existing well pad for exploratory drilling. All exploratory wells would be completed on the pad once the initial well drilling is finished. Only in the event that exploration is followed by development phase drilling would a centralized frac pad be constructed so that wells could be completed remotely from one centralized pad (**Table 3, Figure 1**).

The working pad size includes areas 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 to accommodate efficiency drilling rigs, while keeping surface disturbance to a minimum at each well pad location. For the exploration phase, 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 pad for efficiency drilling. Because the RU 23-5 well pad would be designed to accommodate two efficiency cellars, it would be built in two phases. Exploratory wells would be drilled from a smaller, single-cellar pad that would be expanded for development prior to the drilling of efficiency wells. After completion operations, all well pads would be reduced in size to minimize the long-term footprint in accordance with BLM interim reclamation policy.

#### **General Pad Construction**

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 mud would be used at each drilling location. 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 (MSDS) would be available at each well pad location. 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 closed as soon as practicable, but consistent with current regulations.

A reserve pit is not required for efficiency rigs because they operate using a closed system. However, there is a need to dispose of drill cuttings. Therefore, instead of a reserve pit, a cuttings trench would be constructed. 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 of 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. If such a backup storage site were needed for cuttings disposal, Sundry Notice authorization would be obtained from BLM and COGCC.

With all pads combined, the Proposed Action would result in up to 6.75 acres of long-term (up to 35 years) disturbance from pads. With all pads combined, the Proposed Action would also result in up to 24.5 acres of short-term (1 to 2 years) disturbance from pads. Because the Proposed Action is phased development, for the Flatiron Mesa as a whole, pad construction and drilling would occur periodically throughout the 5-year drilling period. Timing of pad work would be dependent upon the drilling schedule (**Table 2**); pads would be constructed or expanded periodically as needed for drilling.

Williams would completely reclaim all disturbed areas that are not needed for production operations in accordance with the BLM's reclamation COA (Appendix B) and the interim and final reclamation plans approved in the APDs. Williams would also employ procedures presented in Best Management Practices, Design Features, and Mitigation Measures. In the case that a well pad is left open for more than one year between rig visits (such as is proposed for the SR 43-12), pits would be closed, slopes would be re-contoured to the extent necessary to accommodate seeding, and interim reclamation seed mix would be applied.

### **Individual Pad Descriptions**

#### **Proposed RU 23-5 Pad**

The proposed RU 23-5 well pad location (**Table 3, Figure 1**) is located in relatively flat but rocky terrain on the top of Flatiron Mesa. Vegetation in the area consists of sagebrush and deciduous mountain shrub (primarily Gambel oak), with an understory of various bunch grass species. The pad and access road would be located entirely on BLM surface. To construct the pad, the maximum cut would be 10.5 feet and maximum fill would be 8.1 feet. Historic sources of disturbance include livestock grazing, a controlled burn, and the installation of a Public Service Company of Colorado (PSCO) overhead electric transmission line. The proposed access road and ETC pipeline to the RU 23-5 pad location would occupy a shared ROW with the PSCO maintenance road for most of their length, and would follow an existing two track for the remainder.

The RU 23-5 pad was originally planned for exploration and possible development in the western half of Section 5 (**Table 2**); exploration or development of the eastern half of Section 5 was not originally planned. During the early onsite visit and consultation conducted with Williams, BLM determined that the planned location of the RU 23-5 in the western half of Section 5 would preclude future development of the eastern half of the section without the addition of another pad and access road. To reduce additional surface disturbance associated with the construction and drilling of an additional pad in Section 5, Williams proposed to move the RU 23-5 pad to a more centralized location within Section 5. The relocation and reconfiguration of the pad would accommodate the efficiency rigs necessary to directionally drill all of Section 5 from one location and additional future wells to the north in Section 32.

The total size of the RU 23-5 pad during the exploration phase would be 3.8 acres, and it would be enlarged during the development phase to 5.3 acres. However, the net surface disturbance necessary to drill additional wells that would be required for two well pads would be reduced.

#### Existing RU 34-6 Pad

The one existing well pad (**Table 3, Figure 1**), RU 34-6, is also located on the relatively flat but rocky terrain on top of Flatiron Mesa. The pad and access road are both located entirely on BLM surface. Vegetation surrounding the existing pad consists of sagebrush, mountain shrub, and juniper woodlands, with an understory of native and introduced grasses. The existing pad would be expanded to a working pad size of 5.3 acres to accommodate wellhead placement associated with an efficiency cellar. To expand the pad, the maximum cut would be 18.1 feet and maximum fill would be 15.7 feet. The existing access road would be used, but the existing surface gas-gathering line would be abandoned and an 8-inch buried line that parallels the access road would be installed. After completion operations, this pad would be reduced in size to a long-term footprint that is only slightly greater than the current pad size.

#### Proposed RU 42-7 Pad

The proposed RU 42-7 well pad location is located on Fee surface on top of a small foothill on the west side of Flatiron Mesa. The elevation of the proposed pad is only slightly lower than that of Flatiron Mesa, so vegetation is similar, though mountain shrub dominates the overstory with some sagebrush and native bunchgrasses in the openings between stands of Gambel Oak. Approximately 1,500 feet of the proposed access road is located on BLM surface. Access road and pipeline would occupy a shared ROW. The steepness of the slope between the existing BLM road and proposed pad location necessitates one switchback in the access road. Unless the centralized frac pad (RU 11-7) were to be constructed prior to the RU 42-7, this pad would likely be built to its full size of 5.5 acres even for exploratory wells in order to accommodate completions on pad for the first four wells. To construct the pad, the maximum cut would be 30.9 feet and maximum fill would be 27.5 feet.

#### Proposed SR 43-12 Pad

The proposed SR 43-12 well pad location is on Fee surface between Flatiron Mesa and Beaver Creek. The proposed pad location occupies a small, vegetated bowl with an overstory of Gambel oak and an understory of native bunchgrasses. Though the wells to be drilled from this pad all access minerals in Section 12, the pad straddles the section line between Section 12 in T7S, R94W, and Section 7 in T7S, R93W. Proposed pad placement was chosen in order to avoid the immediate vicinity of Beaver Creek and thus minimize the potential for impacts to the creek. The proposed location is adjacent to an existing lease road, so construction of a new access road would be unnecessary. The ultimate working pad size would be approximately 5.6 acres. To construct the pad, the maximum cut would be 28.1 feet and maximum fill would be 17.3 feet.

#### RU 11-7 Centralized Frac Pad

Additional proposed pads include one new remote frac pad in the NW Section 7 that would be located on Fee surface above the existing RU 11-7. The proposed location is on a small, relatively flat-topped hill. Vegetation is primarily sagebrush with an understory of native and introduced grasses. This pad would not be used as a drilling location (**Table 3, Figure 1**). Instead, it would accommodate the water and equipment required to frac wells within the development area. Temporary surface lines would be laid along routes identified on **Figure 1** to deliver and return frac and flowback water to and from each of the four well pads in the MDP. Use of this remote, centralized frac pad would minimize the space needed on each well pad for completions equipment, as well as eliminate frac water hauling beyond the centralized

pad. The RU 11-7 Frac Pad would be constructed to a working size of 2.8 acres, and would be entirely reclaimed once completion of the last well drilled in the FMMDP area is finished. To construct the pad, the maximum cut would be 26.4 feet and maximum fill would be 18.8 feet.

## **DRILLING OPERATIONS**

All wells would be directionally drilled to locations within the Federal leases held by Williams (lease numbers COC041916, COC050944, and COC036490,) 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 15 days per well using conventional or efficiency rig technology.

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. 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-foot) 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 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 generated during the well drilling process would be contained in onsite test tanks, and removed at intervals by truck.

Depending on the location, each producing well would be drilled to an approximate depth of 7,000 feet to 10,000 feet (measured depth [MD]). Natural gas would be produced through perforations in the casing. 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. The pad size and design would include a cuttings assessment that incorporates the expected volume of cuttings for each pad. 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 area may be required. If an offsite disposal area were needed for cuttings disposal, Sundry Notice authorization would be obtained from BLM and COGCC.

## **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 maximize production of hydrocarbons from a well. As mentioned previously, the centralized completion pad (RU 11-7) would be constructed adjacent to the existing RU 11-7 well pad and 3.3 miles of surface pipelines would be laid primarily within road or pipeline disturbed areas to support remote frac operations at the well pads in the project area. Approximately 0.58 mile of frac lines would be laid cross-country on private land in Section 7.

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. Fracture stimulations are typically conducted without a service rig. Required equipment includes 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 approximately 9 days per well, including 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 rather than vented or flared, because gas-gathering lines are expected to be in place. 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. **Figure 2** illustrates the process of SIMOPS drilling, completion, and production. 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 wellheads. Using SIMOPS, the completion operations do not need to wait until all wells have been drilled and the drilling rig moves off location.

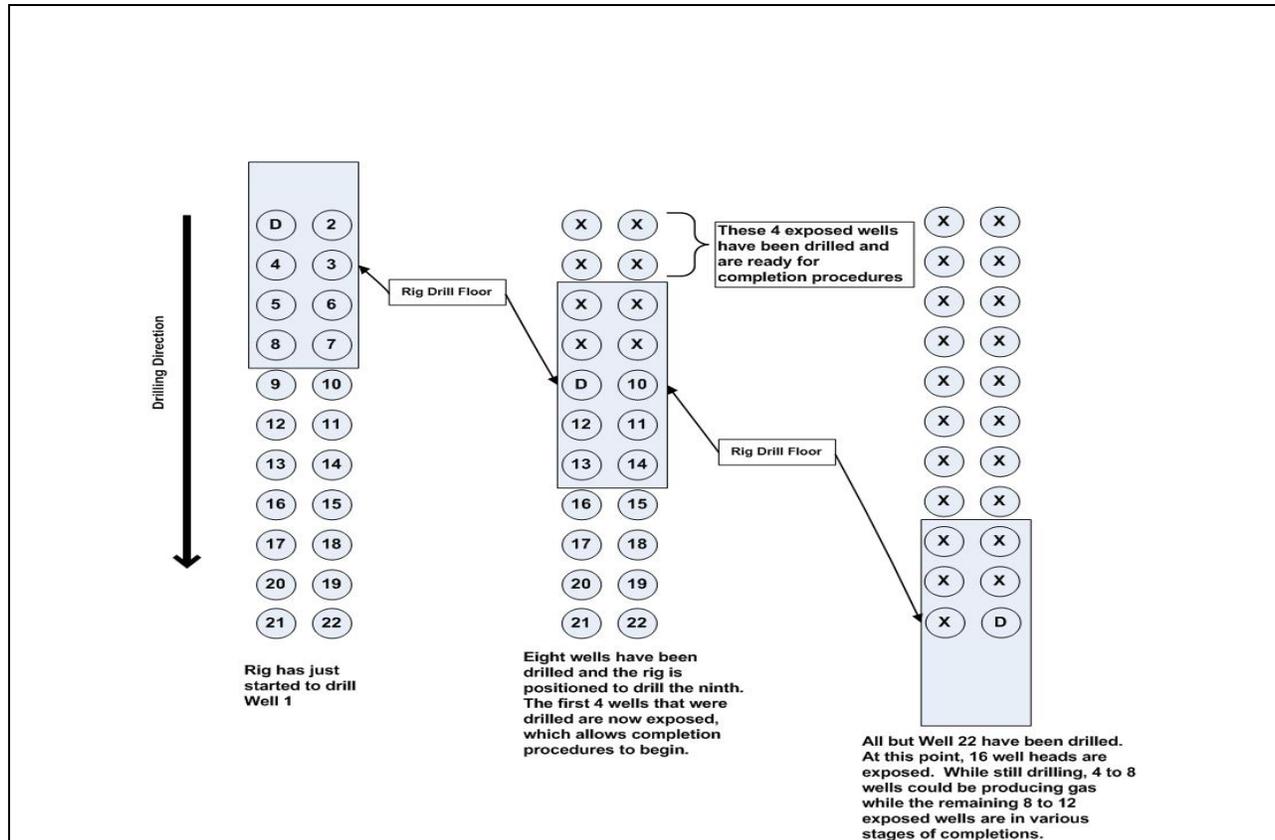
Frac equipment would be located at the centralized RU 11-7 (**Table 3**), while completion equipment would be located on the pad containing the wells being completed. Fracture stimulation during the development phase would be conducted from the proposed remote frac pad for all four well pads (**Figure 1**). During completions operations, a total of eight tanks would be staged on the RU 11-7 frac pad, including three sand tanks, two gunbarrels, two water tanks, and one condensate tank.

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. Gas would be metered and delivered to the gas-gathering system. 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.

**Figure 2: SIMOPS Drilling, Completing, and Producing**



The location of the completion facilities would be finalized once the development phase is initiated, and the information would be provided in the APDs. Wherever feasible, completion operations would be conducted using existing disturbed areas. Temporary surface pipelines would be located adjacent to existing access roads wherever practical. Approximately 3.3 miles of temporary surface line would be needed to complete all four pads. In the event that equipment or temporary surface lines would need to be located in previously undisturbed areas (as identified in the APDs), Williams would consult with BLM to ensure all facilities are placed in locations that would not adversely affect resource concerns.

## 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 for production accountability.
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 ETC gas-gathering system. Condensate would be tank gauged or metered prior to sales.
4. To the extent feasible, Williams would consolidate the use of production facilities. Facilities would be painted to match the surrounding landscape in order to reduce the visual contrast of the improvements over the life of the producing wells.

### **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 water and condensate tanks (number depends on volume and mineral owners).

### **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.

## **ETC'S PLANS FOR GAS GATHERING**

The proposed system of gathering lines in the Flatiron Mesa area, presented in **Figure 1** and **Table 3**, consists of installation of new pipelines and upgrading of existing pipelines including the "looping" of new lines within ETC's existing pipeline corridor.

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 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.

A 12-inch trunk pipeline would be installed to gather gas from the RU 23-5 pad and 42-7 pad. This line would be approximately 3.73 miles in length and would be capable of handling approximately 60 million standard cubic feet per day (mmscf/d) at 300 pounds per square inch (psi).

An 8-inch pipeline would be installed to gather gas from the RU 34-6, RU 13-7, and RU 43-12 pads. These lines would run from the respective pad to the 12-inch trunk line. This total length of these lines would be approximately 0.9 miles. **Table 3** lists lengths for each pad. This 8-inch line would be capable of handling approximately 27 mmscf/d at 300 psi. One existing surface line (with a length of 0.20 mile) that currently gathers gas from the existing RU 34-6 pad would be removed.

ETC would minimize meter boxes installed on the well pads as much as possible by utilizing multiple run meter boxes capable of handling multiple wells. New pipelines would be installed during the exploratory drilling phase to handle the total planned gas production of the wells including exploratory and development phase wells. No new compressor stations are anticipated within the Flatiron Mesa area.

## PRODUCTION OPERATIONS AND MAINTENANCE

Williams would operate all wells 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 transmitted by radiotelemetry to host computer in Williams's office in Parachute, Colorado. Using this system, 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. In addition to these visits, water and condensate would be hauled off the pad to existing centralized facilities. **Table 6** details the production traffic estimates for the first years of production. As the wells age, water production would decrease, thereby causing a decrease in the number of truck trips per day.

**Table 6. Truck-Trips Required to Haul Condensate and Water**

<b>Exploratory Phase</b>	<b>16 wells</b>
Condensate	1 trip per 3 days
Water	4 trips per day
<b>Full Development Phase</b>	<b>93 wells</b>
Condensate	3 trips per day
Water	25 trips per day

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 would 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 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 would also be presented in the Master Surface Use Plan of Operations to be submitted with the APDs.

### General

- Williams would implement BMPs consistent with its environmental programs and in accordance with recommended State and Federal guidance and regulations. Wherever feasible, 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, COGCC, and Colorado Department of Health and Environment (CDPHE) regulations and guidance.
- Title 13, Article II, of the City of Rifle Municipal Code requires that Williams obtain a watershed district permit from the City because a portion of the Proposed Action would occur within the Beaver

Creek Watershed, which is diverted to serve as the City's municipal water source. Similar to the environmental analysis conducted by the BLM for the Flatiron Mesa MDP, the application for the watershed district permit requires analysis of the Proposed Action and the best management practices and mitigation measures that would be implemented to reduce the risks of impacts to the City's water supply. Williams would obtain and comply with a City of Rifle Watershed Permit for excavation, grading, filling or surfacing, vegetation removal, drilling operations, spraying or using herbicides, and fuel transport, as required by Section 13-2-110. Compliance with the conditions of the permit would require participation in the City of Rifle's ongoing surface water sampling and analysis plan in the Beaver Creek watershed upstream of the municipal water supply intake.

### **Construction**

- Well pad locations, access roads, and ancillary facilities would be located, constructed, and maintained to avoid or minimize disturbance to natural and cultural resources, including perennial and intermittent streams, wetlands, and wildlife.
- All well pads, access roads, and ancillary facilities would be located in such a manner as to avoid or minimize wildlife habitat fragmentation.
- Well pads and centralized frac pad would be designed to balance earthwork quantities to minimize the need to haul or stockpile excess material.
- All construction projects would employ topsoil stripping, segregation, and salvage.
- 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 COAs.
- 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, including the City of Rifle Watershed permit process.
- 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) Section 404 permitting process, including Nationwide Permits.
- Only water that is 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, Garfield County, Private landowners, or Williams's policy to control traffic hazards and speed.
- To avoid potential impacts to powerline structures on PSC's existing overhead electric transmission line, a 50-foot setback from the edge of the tower footings would be followed.

### **Drilling and Completion Operations**

- 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 fencing or netting as necessary.
- Water-based drilling mud 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 adhere to BLM's COAs and be evaluated under Williams's 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.
- During development phase, frac and flowback water would be piped from and back to the RU 11-7 Frac Pad from all four well pads in the MDP, reducing truck traffic. All frac water would be recycled to minimize water usage.

### **Gas Gathering Pipeline Construction, Operation and Maintenance**

- Where possible, the gathering system would be located adjacent to access roads.
- Pipelines would undergo reclamation as soon as possible after construction to minimize short- and long-term disturbance areas.
- During construction of all buried pipelines, surface disturbance would be avoided in the topsoil stockpile area by clearing vegetation with a hydroaxe or similar equipment that would leave the root structure of the existing brush species intact and readily available for resprouting and regrowth.

### **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 or in a clustered area in individual well pads.
- Following development of all wells within a prescribed area, existing gates and fences would 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 within the FMMDP area, as access roads to the area cross private lands.
- 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.
- Noxious weeds and other undesirable plant species inadvertently introduced due to soil disturbance during construction activities would be monitored and treated over the life of the project by methods approved by the BLM. 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.

### **Interim Reclamation**

- Following 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 completion of all wells proposed on a pad, Williams would stabilize the disturbed area by re-contouring, mulching, providing runoff and erosion control, replacing topsoil, and seeding with BLM-prescribed native seed mixes (or landowner requested seed mix on Fee surface), and conducting weed control, as necessary. In cases where the exploratory drilling and development drilling on a single pad occur more than 1 year apart, slopes would be recontoured to the extent necessary to accommodate seeding, and seed mixes required by BLM or requested by the private landowner would be applied to stabilize the soil between visits.

- Recontouring for interim reclamation would approximate the natural topography of the area disturbed, while allowing for the minimum required work area around the wellheads and access to production equipment and tanks on the pad.
- The primary objective of interim reclamation would be stabilization of disturbed areas that are not needed for production of the wells. Additional objectives of recontouring and reseeding would include reduction of visual contrast of the pad, restoration or enhancement of the productivity of the site, and approximation of hydrologic qualities of the site.

### **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. 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 COAs in (Appendix B) and the Noxious and Invasive Weed Management Plan for Oil and Gas Operators (BLM 2007a). BLM would determine at time of abandonment if the continued use of the access road and/or pad was deemed necessary or suitable for other resources uses on the land. Reclamation would include the following objectives:

- Recontour all disturbances to approximately the topography that existed prior to construction, and re-spread 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.
- In the long-term, reclaimed landscapes should have characteristics that approximate the original visual qualities and plant species composition of the surrounding area.

### **MODIFICATION TO PROJECT COMPONENTS**

The proposed locations of the various project components, including pads, roads, and pipelines, reflect the results of meetings and field visits conducted by BLM, Williams, ETC, Public Service Company of Colorado (PSC) and subcontractors to assess proposed well pad layout, proposed access routes and pipelines, erosion control, and reclamation<sup>1</sup> potential. The primary purpose of the meetings and field visits was to assess potential resource impacts associated with the implementation of the Proposed Action, and revisions to the design of the proposed facilities were made to minimize potential impacts.

This section presents a summary of the modifications made to the Proposed Action based on BLM comments. Specific locations for some of these components may also be updated and stipulated in the APDs.

Notable efforts include the following:

- Pads and roads were located based on known sensitive plant locations in order to minimize impacts to both plants and habitat during all phases of exploration and development.
- One pad site (SR 43-12) was moved out of the immediate vicinity of Beaver Creek to reduce the potential for impacts associated with this perennial stream.
- Existing roads were used to the greatest extent possible to avoid additional wildlife habitat fragmentation.
- New roads follow existing two-tracks to the greatest extent possible in order to minimize impacts to sensitive plants and big game and reduce total surface disturbance.
- Well pad locations were adjusted to avoid steep slope and erosion concerns.
- Two pads were located on private land to shorten access roads and avoid additional surface disturbance on federal land.
- Drilling was planned to utilize as few well pad locations as possible using the most current technology.
- A centralized frac pad was placed on private land to avoid additional surface disturbance on Federal land while implementing the benefits of remote frac operations and reducing truck traffic in MDP area.
- Coordination with PSCo on shared use of existing power line road right-of-way for RU 23-5 access road and gathering line.

## **NO ACTION ALTERNATIVE**

Under the No Action alternative, APDs for the 81 Federal wells associated with the Proposed Action including the construction of the RU 23-5 and RU 42-7 pads and expansion of the RU 34-6 pad along with their associated roads and pipelines would be denied. Although initially included in the No Action alternative presented during the public scoping period, it has been determined that a BLM Sundry Notice approval would be needed to authorize the 300 feet of new road construction across public land serving the RU 42-7 pad (see discussion under Realty Authorizations). Since a Federal decision would be necessary to approve that minor road segment on BLM, the RU 42-7 pad including the four Fee wells, by default, would be denied, and thereby not included in the No Action alternative. Furthermore, the proposed RU 11-7 frac pad would not be constructed merely to serve the eight Fee wells planned on the SR 43-12, but instead the well completion work would occur on the SR 43-12 pad.

To summarize, the construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrades serving the SR 43-12 pad on private land would continue under Colorado Oil and Gas Conservation Commission authority and would represent the No Action alternative.

## **SUMMARY OF LEASE STIPULATIONS**

Each of Williams's Federal oil and gas leases (**Figure 1**) includes stipulations intended to protect natural resource values. **Table 7** is a summary of lease stipulations that would apply to the Proposed Action.

**Table 7. Lease Stipulations Applicable to the Flatiron Mesa MDP**

Lease Number	Description of Lands	Stipulations
<b>COC36490 (1983)</b>	T7S R94W Section 12: Lots 3, 4, 7, S2NW, SW, SWSE	Since this lease is being affected by only Federal well bottomholes, the Surface Disturbance Stipulations described in the lease are not applicable.
<b>COC41916 (1986)</b> <b><u>Proposed Pad</u></b> <b><u>RU 23-5</u></b>  <i>Winter TL applies</i>	T6S R93W Section 32: ALL T7S R93W Section 5: Lots 1, 2, S2   T7S R93W Section 6: SE4	<b>Timing Limitation:</b> Seasonal Wildlife (Big Game Winter) Habitat (1/16 - 4/29). Limitation does not apply to maintenance and operation of producing wells. Exceptions may be specifically approved by the BLM Field Manager.  <b>No Surface Occupancy:</b> Although the lease indicates an NSO, it provides no rationale for the stipulation. However, a review of the 1999 GSFO Supplemental Oil & Gas Environmental Impact Statement (OGSEIS, BLM 1999b) revealed an established NSO for Domestic Watershed Areas, in particular the Rifle municipal watershed within the stated legal descriptions. As such, the 1999 stipulation would be applied. Exception criteria state: Activity may be permitted if the BLM determines, in consultation with the community of Rifle, that the applicant's proposal would produce only a negligible decrease in water quality.
<b>COC50944 (1990)</b> <b><u>Existing Pad</u></b> <b><u>RU 34-6</u></b> <b><u>Expansion</u></b>  <i>Winter TL does not apply</i>	T7S R93W Section 6: Lots 4, 5, 8, 9, E½SW¼ Section 7: Lots 5-9 Section 17: W½   T7S R93W Section 6: Lots 6, 7	<b>No Surface Occupancy:</b> No surface use is allowed for the purpose of protecting Critical Watershed Areas, presumably within the boundary of City of Rifle Municipal Watershed (see NSO note above with exception criteria from 1999 OGSEIS (BLM 1999b)).  <b>Timing Limitation:</b> Seasonal Wildlife (Big Game Winter) Habitat (1/16 - 4/29) Limitation does not apply to maintenance and operation of producing wells. Exceptions may be specifically approved by the BLM Field Manager.

## LAND USE PLAN CONFORMANCE REVIEW

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

Name of Plan: The current land use plan is the *Glenwood Springs Resource Management Plan (RMP)*, approved in 1984 and revised in 1988 (BLM 1984). Relevant amendments include the *Oil and Gas Plan Amendment to the Glenwood Springs Resource Management Plan* (BLM 1991) and the *Oil & Gas Leasing & Development Record of Decision and Resource Management Plan Amendment* (BLM 1999a).

Decision Language: The 1991 Oil and Gas Plan Amendment (BLM 1991) included the following at page 3: “697,720 acres of BLM-administered 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” (BLM 1991, page 3). This decision was carried forward unchanged in the 1999 ROD and RMP amendment at page 15 (BLM 1999b): “In areas being actively developed, the operator must submit a Geographic Area Proposal (GAP) [currently referred to as a Master Development Plan, MDP] that describes a minimum of two to three years activity for operator controlled leases within a reasonable geographic area.”

Discussion: The Proposed Action is in conformance with the 1991 and 1999 RMP amendments cited above because the Federal mineral estate proposed for development is open to oil and gas leasing and development. In addition, the Proposed Action describes a multi-year development plan over a large geographic area and, as such, is in conformance with decision to require operators to submit Master Development Plans (MDPs), referred to at that time as Geographic Area Plans (GAPs).

## STANDARDS FOR PUBLIC LAND HEALTH

In January 1997, Colorado BLM approved the Standards for Public Land Health. The five standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. The environmental analysis must address whether the Proposed Action or alternatives being analyzed would result in impacts that would maintain, improve, or deteriorate land health conditions relative to these resources. These analyses are located in specific elements to be included within the planned Environmental Assessment. 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 was included in the Rifle West LHA (BLM 2005).

## 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. Some of the critical elements that require inclusion in this EA are not present; others may be present but would not be affected by the Proposed Action and alternative (**Table 8**). Only the mandatory critical elements that are present and affected are described in the following narrative. In addition to the mandatory critical elements are other resources that would be affected by the Proposed Action and the No Action alternative. These are presented under **Other Affected Resources**.

**Table 8. Critical Elements of the Human Environment (\*Public Land Health Standard)**

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

**CRITICAL ENVIRONMENTAL ELEMENTS**

**Air Quality**

**Affected Environment**

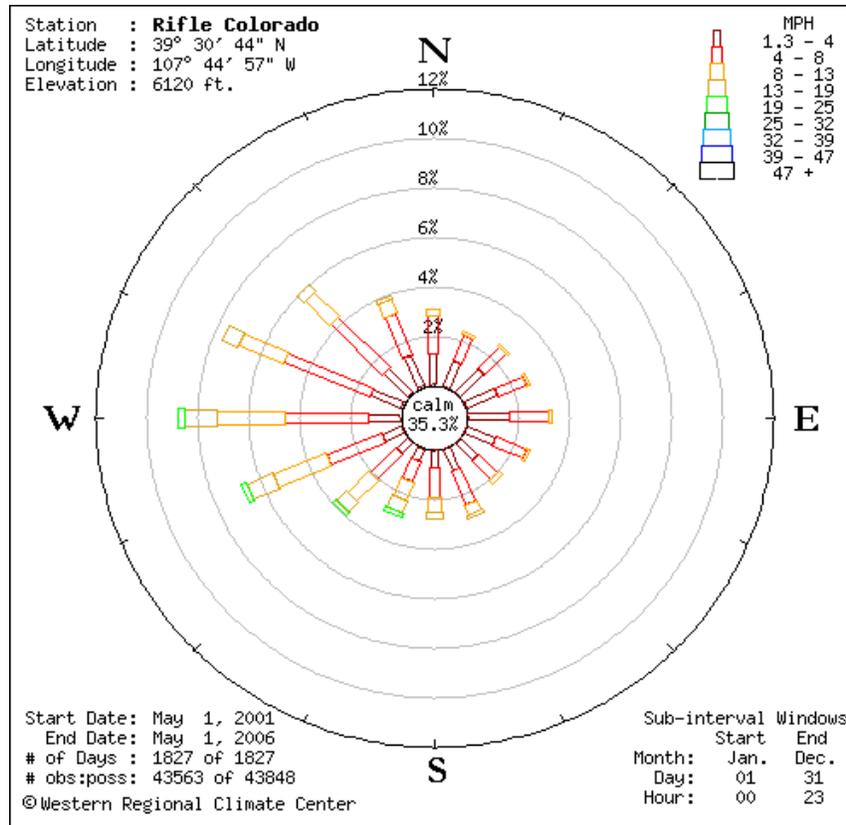
The FMMDP is located in a semi-arid (dry and cold), mid-continental climate regime. The area is typical of the western high country with abundant sunshine, low humidity, low rainfall, and cold, snowy winters. The nearest meteorological measurements were collected at Rifle, Colorado (1910-present) (WRCC 2006), approximately 5 miles north of the FMMDP area. Average annual precipitation in Rifle is 11.61 inches. Average snowfall is 38.6 inches, with December and January being the snowiest months. Precipitation is relatively evenly distributed throughout the year. The frost-free period is generally mid-May to mid-September. **Table 9** shows the average monthly temperatures and precipitation, 1910-2005.

**Figure 3** shows the relative frequency of winds in Rifle, with radial distributions by speed class, indicating the direction of the wind source. Winds generally originate from a westerly direction. Mean annual wind speed at Rifle is approximately 4 miles per hour. The frequency and strength of winds greatly affect the dispersion and transport of air pollutants. Atmospheric dispersion in the region is generally good during the day, but less so at night when cooler temperatures and calm winds reduce pollutant mixing and transport. Dispersion is also generally reduced along valley floors.

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 in areas of public use. Although specific air quality monitoring has not been conducted within the FMMDP area, regional air quality monitoring has been conducted in Rifle and elsewhere in Garfield County. 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 diameter (PM<sub>10</sub>) and less than 2.5 μ in diameter (PM<sub>2.5</sub>), and sulfur dioxide (SO<sub>2</sub>).

**Table 9. Mean Temperature Ranges and Total Precipitation at Rifle, CO**

<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 3. Wind Rose for Rifle, CO**

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

The FFMDP area lies within Garfield County, which has been described as an attainment area under CAAQS and NAAQS. An attainment area is an area where ambient air pollution quantities are below (i.e., better than) NAAQS standards. As shown in **Table 10**, regional background values are well below established standards, and all areas within the cumulative study area are designated as attainment for all criteria pollutants.

Federal air quality regulations are enforced by the CDPHE. The Prevention of Significant Deterioration (PSD) Program within CDPHE is designed to limit incremental increases for specific air pollutant concentrations above a legally defined baseline level, as defined by an area's air quality classification. Incremental increases in PSD Class I areas are strictly limited, while increases allowed in Class II areas are less strict.

The FMMDP and surrounding areas are classified as PSD Class II. The PSD Class I areas within 100 miles of the project area are the Flat Tops Wilderness (35 miles NE), Maroon Bells-Snowmass Wilderness (40 miles SE), West Elk Wilderness (50 miles SE), Black Canyon of the Gunnison National Park (45 miles S), Eagles Nest Wilderness (80 miles E), and Arches National Park (75 miles SW). Dinosaur National Monument (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 10**.

**Table 10. Air Pollutant Background Concentrations, Colorado and National Ambient Air Quality Standards, and Prevention of Significant Deterioration (PSD Increments)**

Pollutant/Averaging Time		Measured Background Concentration	Colorado and/or National AAQS	Incremental Increase Above Legal Baseline PSD Class I/ II	
Carbon Monoxide (CO) <sup>1</sup>	1-hour	1,160 µg/m <sup>3</sup>	40,000 µg/m <sup>3</sup> (35 ppm)	n/a	n/a
	8-hour	1,160 µg/m <sup>3</sup>	10,000 µg/m <sup>3</sup> (9 ppm)	n/a	n/a
Nitrogen Dioxide (NO <sub>2</sub> ) <sup>2</sup>	Annual	10 µg/m <sup>3</sup>	100 µg/m <sup>3</sup> (0.053 ppm)	2.5 µg/m <sup>3</sup>	25 µg/m <sup>3</sup>
Ozone <sup>3</sup>	8-hour	149 µg/m <sup>3</sup> (highest)	147 µg/m <sup>3</sup> (0.075 ppm)	n/a	n/a
Particulate Matter (PM <sub>10</sub> ) <sup>1</sup>	24-hour	114 µg/m <sup>3</sup> (highest)	150 µg/m <sup>3</sup>	8 µg/m <sup>3</sup>	30 µg/m <sup>3</sup>
Particulate Matter (PM <sub>2.5</sub> ) <sup>4</sup>	24-hour	40 µg/m <sup>3</sup> (highest)	35 µg/m <sup>3</sup>	n/a	n/a
	Annual	11.2 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	n/a	n/a
Sulfur Dioxide (SO <sub>2</sub> ) <sup>5</sup>	3-hour	24 µg/m <sup>3</sup>	1,300 µg/m <sup>3</sup> (0.5 ppm)	25 µg/m <sup>3</sup>	512 µg/m <sup>3</sup>
	24-hour	13 µg/m <sup>3</sup>	365 µg/m <sup>3</sup> (0.14 ppm)	5 µg/m <sup>3</sup>	91 µg/m <sup>3</sup>
	Annual	5 µg/m <sup>3</sup>	80 µg/m <sup>3</sup> (0.03 ppm)	2 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>

<sup>1</sup> Background data collected in Rifle, 2008; highest levels recorded in April (Air Resource Specialists 2009).  
<sup>2</sup> Background data collected by EnCana at site north of Parachute, 2007 (CDPHE 2008a).  
<sup>3</sup> Background data collected in Rifle, 2008; highest levels recorded in July (Air Resource Specialists 2009).  
<sup>4</sup> Background data collected in Rifle, September - December 2008; highest levels recorded in December (Air Resource Specialists 2009).  
<sup>5</sup> Background data collected at Unocal site, 1983-1984 (CDPHE 2008a).

CDPHE, under its EPA-approved State Implementation Plan (SIP), is the primary air quality regulatory agency responsible for determining potential impacts once detailed industrial development plans have been made; 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 any project's air quality impacts prior to its operation. Unlike the conceptual "reasonable but conservative" engineering designs used in NEPA analyses, any CDPHE air quality preconstruction permitting required would be based on site-specific, detailed engineering values, which would be assessed in CDPHE's review of the permit application.

Environmental Consequences

*Proposed Action*

The FMMDP includes construction of three well pads, expansion of an existing well pad, construction of a centralized satellite frac pad, construction of 1.47 miles of new access roads, and construction of 4.64 miles of buried gas pipeline; drilling up to 93 new wells (including 81 Federal wells); and installation of equipment to service these wells. The project does not include construction of any compressor stations.

Air quality would decrease during construction of the FMMDP roads, pads, pipelines, and wells. Pollutants generated during these activities would include combustion emissions and fugitive dust associated with construction equipment and vehicles. Construction activities for each well pad would occur between 7:00 a.m. and 6:00 p.m. each day for a period of approximately two weeks. Construction of roads and pipelines would take approximately 5 to 10 weeks each, or 1 to 2 weeks per pad; much of this construction would occur concurrently. Once construction activities are complete, air quality impacts associated with these activities would also cease. Assuming that 1,100-hp conventional rigs and 1,500-hp efficiency drilling rigs are used with 40% drill rig utilization, each well is estimated to take approximately

24 days to drill and complete (15 days + 9 days). Seven to 37 wells would be drilled per year, spreading the drilling program over a period of five years. Estimated emissions from construction and drilling activities are shown in **Table 11**, assuming three efficiency rigs operating at once on separate pads, with 40% drill rig utilization and timing limitations extending from January 16 to April 29. Emission calculations further assume that each well would take 7 days to drill and 7 days to complete, with the full drilling program requiring approximately 5 years.

**Table 11. Potential Emissions from Drilling and Construction Activities\***

Source	Pollutant	Emission Limits (g/braking hp/hr)	Yearly Hours of Operation	Annual Emissions (tons/year)	Reference
Three Drilling Rigs (H&P FlexRig3), each with Three 1,500-HP Diesel Engines	NMHC + NO <sub>x</sub>	4.8	3,504	250.3	EPA Tier II
	CO	2.6	3,504	135.6	EPA Tier II
	VOC	1.0	3,504	52.1	EPA Tier I
	PM <sub>10</sub>	0.15	3,504	7.8	EPA Tier II
	PM <sub>2.5</sub>	n/a	3,504	0.8	EPA PM <sub>10</sub> Multiplier
	Formaldehyde	0.0018	3,504	0.094	EPA AP 42, Table 3.3-2
Construction Heavy Equipment	PM <sub>10</sub>	1.2 (tons/acre/mo)	1,008 (4.1 mo)	113.6	EPA AP 42, Table 13.2.3.3
	PM <sub>2.5</sub>	n/a	1,008 (4.1 mo)	17.4	EPA PM <sub>10</sub> Multiplier
*Activity durations are about 2 weeks each (well pad construction, 2 weeks at 8 hours per day; access road construction, 1-2 weeks per pad; pipeline construction, 2 weeks per pad; drilling and completion, 2 weeks per well). Assumes a 12 month per year construction and drilling season, spread evenly over 3 years, with 40% drill rig utilization. Total GGMDP disturbed acreage of 82.4 acres over 3 years equates to 27.5 acres per year. NMHC = non-methane hydrocarbons. Sources: CDPHE (2008b), USEPA (1996, 2005).					

Once the wells are completed, ancillary equipment would be installed at each well pad associated with production and operation, including several 300 to 500 bbl condensate and produced water tanks and separators. The emissions from the condensate tanks are provided in **Table 12**. The calculated estimates assume that 15 bbl/day of water would be produced from each well and that approximately 10% of the produced water would be separated into condensate.

**Table 12. Condensate Tank Emission Estimates Per Completed Well Pad**

Source	Pollutant	Emission Factors (lbs/bbl)	Production* (bbl/day)	Annual Emissions* (tons/year)	Reference
Several 400-bbl Condensate Tanks Per Pad (7 to 18 Wells)	VOCs	10	11-27	19-49	CDPHE Guidance for Garfield County
*Production and annual emission estimate ranges are based on 7 to 18 possible wells per pad.					

Volatile organic compound (VOC) emissions are dependent on the characteristics of the condensate, tank operations, and production. The air impacts associated with the condensate tanks at each well pad are anticipated to be minor, but VOC emissions would be controlled as required under CDPHE Regulation 7.

If deemed necessary by the State, Williams may need to install a vapor recovery or thermal destruction system to reduce VOC concentrations.

The Roan Plateau RMPA and EIS describes potential effects from oil and gas development (BLM 2006:4-26 to 4-37). Analysis was completed with regard to greenhouse gas emissions, a near-field and far-field analysis for “criteria pollutants” (particulate matter [PM<sub>10</sub> and PM<sub>2.5</sub>], carbon monoxide, sulfur dioxide, and nitrogen oxides) and hazardous air pollutants (benzene, ethylbenzene, formaldehyde, hydrogen sulfide, toluene, and xylenes). Sulfur and nitrogen deposition, acid neutralizing capacity, and a visibility screening analysis were also completed in the Roan Plateau RMPA and EIS. Because the visibility screening analysis showed potential impacts at one or more Class I areas, a refined visibility analysis was also completed. The refined visibility analysis indicated a “just noticeable” impact on visibility for one day each at two Class I areas (Black Canyon of the Gunnison National Park and Mt. Zirkel Wilderness). For the other pollutants analyzed, implementation of oil and gas development under the Roan Plateau RMPA and EIS would have either no or negligible long-term adverse impacts on air quality. 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 emissions from vehicles and drilling equipment, and fugitive dust from construction and use of the well pad and access road. Concentrations would be below applicable ambient air quality standards as analyzed in the Roan Plateau RMPA and EIS. However, it is anticipated that construction, drilling, and production activities would produce high levels of fugitive 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 BLM. Additionally, the operator would be required to apply gravel to all new or upgraded BLM roads in the project area to a compacted depth of 6 inches, further reducing fugitive dust emissions (Appendix B).

Since the current land use plan was approved, ongoing scientific research has identified the potential impacts of “greenhouse gases” (GHGs) and their effects on global atmospheric conditions. These GHGs include carbon dioxide, methane, nitrous oxide, water vapor, and several trace gases. Through complex interactions on a global scale, these GHG emissions are believed by many experts to cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the Earth back into space.

In 2001, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2007) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. In 2007, the IPCC also concluded that “warming of the climate system is unequivocal” and “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic (man-made) greenhouse gas concentrations” (National Academy of Sciences 2007). Other theories about the effect of GHGs on global climate change exist.

The assessment of GHG emissions and climate change remains in its formative phase. Therefore, it is not yet possible to know with certainty the net impact to climate from GHGs produced globally over the last century or from those produced today. The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts of climate change on the specific area of the Proposed Action. In addition, while any oil and gas leasing or development projects may contribute GHGs to the atmosphere, these contributions would not have a significant effect on a

phenomenon occurring at the global scale believed by some to be due to more than a century of human activities.

#### *No Action*

Under the No Action alternative, most project components included in the Proposed Action would not be approved or constructed, including any new roads; one new pad (SR 43-12) on private land accessing eight Fee wells would be constructed along with the associated ETC pipeline upgrade. Therefore, emissions of pollutants from vehicle and equipment engines or of fugitive dust from disturbed surfaces that would accompany the Proposed Action would be reduced by at approximately 80%.

### **Cultural Resources**

#### Affected Environment

Cultural resources are fragile and nonrenewable remains of prehistoric and historic human activity, occupation, or endeavor as reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human history. Cultural resources comprise the physical remains themselves, the areas where significant human events occurred even if evidence of the event no longer remains, and the environment surrounding the actual resource. Because of the sensitive nature of cultural resources, the technical reports for this project are not included with the EA. These reports are protected from public disclosure and are exempt from the Freedom of Information Act.

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 require Federal agencies to take into account the effect of their actions 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 FMMDP, whether the surface ownership is Federal or private.

Cultural resource inventories have been conducted for all areas of proposed surface disturbance. The 25 inventories within the FMMDP conducted to date include surveys for 18 oil and gas projects, 2 electrical transmission corridors, 1 seismic line, and 4 range improvement projects.

Inventories conducted within the FMMDP area have identified 26 cultural resources:

- One site eligible for NRHP listing/historic properties
- Six sites not eligible for NRHP listing
- One “Need Data” site potentially eligible for NRHP listing
- Eighteen isolated finds not eligible for NRHP listing by definition

The cultural resources identified included isolated flakes, projectile points, groundstone, historic rock cairns, historic homesteading structures and roads, and prehistoric lithic scatters and campsites.

No formal consultation was initiated with the Colorado State Historic Preservation Office (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’s Proposed Actions within the FMMDP. 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)].

### Environmental Consequences

#### *Proposed Action*

The Proposed Action was designed to avoid all sites eligible for NRHP listing and would not cause removal or project-related direct disturbance to these cultural resources.

The Proposed Action would cause increased human activity in the FMMDP area in the form of project workforce, particularly during construction. New roads also have the potential to increase access by the general public; therefore, the Proposed Action would increase the risk of disturbance, vandalism, collection, or excavation at known or undiscovered cultural resources sites in the project area.

The following mitigation measures would be implemented to minimize the potential for incidental impacts to cultural resources. A standard education/discovery COA for cultural resource protection would be attached to the APDs (Appendix B).

Although project activity itself may not physically impact cultural resources, construction in proximity to a cultural resource may in fact adversely affect the significance of a cultural resource by changing the setting, location, association, and feeling, particularly for culturally sensitive Native American sites or areas of concern. 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 FMMDP would result in degradation of the condition and integrity of setting, location, association, and feeling for which the surrounding landscape is a part of the site's significance.

#### *No Action*

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.

Construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrades serving the SR 43-12 pad on private land would continue under Colorado Oil and Gas Conservation Commission authority. The No Action alternative would not include the education/discovery COA designed to protect cultural resources, and the lack of this mitigating measure for oil and gas development occurring on private lands within the FMMDP area could lead to illegal collection, excavation, or vandalism.

### Invasive Non-native Species

#### Affected Environment

Eleven species of Colorado State-listed noxious weeds were observed within the FMMDP (WWE 2008). Weed density was higher in disturbed areas along existing roads, well pads, and drainages. Spotted knapweed (*Centaurea maculosa*) occurs in various locations on top of Flatiron Mesa along the existing two-track power line road. Russian knapweed (*Acroptilon repens*) occurs in a single location along the main access road on the west side of Flatiron Mesa.

Various non-native thistles such as Canada (*Cirsium arvense*), bull (*Cirsium vulgare*), plumeless (*Carduus acanthoides*), and musk (*Carduus nutans*) are found along the drainages and main access road at the base of Flatiron Mesa. Other weeds found scattered throughout the project area include the non-native annual cheatgrass (*Anisantha tectorum*) and the non-native forbs houndstongue (*Cynoglossum officinale*), burdock (*Arctium minus*), field bindweed (*Convolvulus arvensis*), and mullein (*Verbascum thapsus*).

### 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 numerous invasive, non-native species are present in the project area, the potential for invasion following construction activities is high. Mitigation measures designed to minimize the spread of these species would be attached to well APDs as conditions of approval (Appendix B).

#### *No Action*

Under the No Action alternative, none of the proposed ground disturbance on BLM land would occur; however, the SR 43-12 pad and associated pipeline 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 SR 43-12 pad on private land could create a potential source of weed introductions, and invasive, non-native species would spread if left untreated.

### **Migratory Birds**

#### Affected Environment

The Migratory Bird Treaty Act (MBTA) includes native passerines (flycatchers and songbirds) as well as birds of prey, migratory waterbirds (waterfowl, wading birds, and shorebirds), and other species such as doves, hummingbirds, swifts, and woodpeckers. For most migrant and native resident species, nesting habitat is of special importance because it is critical for supporting reproduction in terms of both nesting sites and food. Also, because birds are generally territorial during the nesting season, their ability to access and utilize sufficient food is limited by the quality of the territory occupied. During non-breeding seasons, birds are generally non-territorial and able to feed across a larger area and wider range of habitats.

The FMMDP area includes pinyon-juniper woodlands and sagebrush grasslands with some Gambel oak and aspen in Jackson Gulch. Given this vegetation, the project area provides cover, forage, breeding, and nesting habitat for a variety of migratory birds. Species found on the U. S. Fish and Wildlife Service (USFWS) list of Birds of Conservation Concern (BCC) that may be present in pinyon-juniper woodlands in the project area include the pinyon jay (*Gymnorhinus cyanocephalus*) and juniper titmouse (*Baeolophus griseus*). Other migratory species associated with this habitat type in the GSFO area include the broad-tailed hummingbird (*Selasphorus platycercus*), black-chinned hummingbird (*Archilochus alexandri*), Say's phoebe (*Sayornis saya*), gray flycatcher (*Empidonax oberholseri*), Townsend's solitaire (*Myadestes townsendi*), American robin (*Turdus migratorius*), mountain bluebird (*Sialia sialis*), blue-gray gnatcatcher (*Poliophtila caerulea*), plumbeous vireo (*Vireo plumbeus*), black-throated gray warbler (*Dendroica nigrescens*), chipping sparrow (*Spizella passerina*), lark sparrow (*Chondestes grammacus*), lesser goldfinch (*Spinus psaltria*), and house finch (*Carpodacus mexicanus*). Winter visitors to pinyon-

juniper habitats in the area include an additional BCC species, Cassin’s finch (*Carpodacus cassinii*), which nests in montane and subalpine forests.

Migratory species associated with sagebrush habitats in the GSFO area include the western kingbird (*Tyrannus verticalis*), western meadowlark (*Sturnella neglecta*), and vesper sparrow (*Pooecetes gramineus*), and potentially the sage sparrow (*Amphispiza belli*) and a BCC species, Brewer’s sparrow (*Spizella breweri*). Sagebrush habitats in the FMMDP were documented during project-related surveys in 2008 to support nesting by Brewer’s sparrow, but no sagebrush sparrows were observed. The latter species generally requires more extensive sagebrush stands at lower elevations.

Oakbrush and mixed mountain shrub habitats in the area are suitable for migrants such as common poorwill (*Phalaenoptilus nuttallii*), dusky flycatcher (*Empidonax oberholseri*), western scrub-jay (*Aphelocoma californica*), Virginia’s warbler (*Vermivora virginiae*), MacGillivray’s warbler (*Oporornis tolmiei*), spotted towhee (*Pipilo maculatus*), green-tailed towhee (*P. chlorurus*), black-headed grosbeak (*Pheucticus melanocephalus*), and lazuli bunting (*Passerina amoena*).

A variety of raptor species are known to occur in this portion of the GSFO area. These include the American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), Cooper’s hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), great horned owl (*Bubo virginianus*), flammulated owl (*Otus flammeolus*), northern pygmy owl (*Glaucidium gnoma*), and northern saw-whet owl (*Aegolius acadicus*). Of these, the golden eagle and flammulated owl are on the BCC list, as are three additional species that occur in the GSFO area but are unlikely to use the FMMDP area: the bald eagle (*Haliaeetus leucocephalus*), which nests and roosts along the Colorado River and major tributaries; the peregrine falcon (*Falco peregrines*), which nests on the Roan Cliffs and hunts along rivers and lakes; and the prairie falcon (*F. mexicanus*), which nests on rocky ledges and cliffs and hunts in grassland and semi-desert shrublands. Another raptor that nests in the GSFO, the northern goshawk (*Accipiter gentilis*), is an occasional winter visitor to pinyon-juniper woodlands from its nesting habitat in montane and subalpine forest.

Raptor surveys conducted by Westwater Engineering in July 2008 focused on mature juniper woodlands and riparian areas. Seven raptor nests were observed in the survey area (**Table 13**). One nest was occupied by a pair of Cooper’s hawks, and the other nests appeared to have been constructed by accipiters, most likely Cooper’s hawks, and possibly representing alternative nest sites for the same territory. Hawks commonly have alternative nests within their home range.

**Table 13. Raptor Nest Sites within the FMMDP Area, 2008**

Date	UTM Location	Comments
7/16/2008	256270E, 4371052N	Inactive Cooper’s hawk – between road and creek; no new material or sign of use in 2008
7/16/2008	256282E, 4370614N	Inactive Accipiter -- two eggshells beneath nest, possible hatch or depredation; 75 meters east of active Cooper’s hawk nest
7/16/2008	256282E, 4370614N	Inactive Accipiter nest
7/16/2008	256283E, 4370625N	Active Cooper’s hawk nest -- female on nest with male defending
7/16/2008	256289E, 4370949N	Inactive Accipiter nest
7/16/2008	256614E, 4370589N	Inactive Accipiter nest
7/15/2008	258992E, 4370884N	Inactive unidentified hawk nest

The occupied nest was located in a cottonwood tree along Beaver Creek, approximately 0.3 mile from pad RU 43-12. Another nest located approximately 75 meters to the east of the occupied nest had the remains of two broken eggshells beneath the nest. It is possible that the Cooper's hawks occupied this nest initially but moved to the other nest when the first nest failed due to predation or severe weather. The inactive nest is located slightly less than 0.25 mile from pad RU 43-12 and slightly more than 0.25 mile from pad RU 13-7.

In all, six of the seven nests identified during the raptor survey in 2008 were along Beaver Creek, where the presence of mature cottonwood trees provides excellent nest sites. The seventh nest, inactive in 2008 and belonging to an unidentified species, was in a tree-size Gambel oak in the southeastern portion of the FMMDP area. No nests were found in pinyon-juniper habitat. Although these small conifers provide potential nest sites for raptors, both Cooper's and sharp-shinned hawks prefer deciduous woodlands. The Cooper's hawks nesting in cottonwoods along Beaver Creek probably hunt for small birds and small diurnal mammals (e.g., chipmunks) in the pinyon-juniper and oakbrush as well as the riparian area.

### Environmental Consequences

#### *Proposed Action*

The MBTA prohibits the "take" of a protected species. Under the Act, the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The USFWS interprets "harm" and "kill" to include loss of eggs or nestlings due to abandonment or reduced attentiveness by one or both adults as a result of disturbance by human activity, as well as physical destruction of an occupied nest.

The Proposed Action would result in the removal of approximately 53.21 acres of vegetation due to new and reopened pads plus new road and pipeline construction. Some of the vegetation loss would be short-term until interim reclamation is completed. Total long-term habitat loss is estimated at 11.2 acres. Where larger oak brush, and pinyon and juniper trees are removed and replaced with grasses and forbs, the habitat would not function as it does in its current condition. This would result in a loss of cover, forage/prey, and breeding/nesting sites.

The Proposed Action would further fragment habitat and reduce habitat patch size and connectivity in the area, altering species composition and abundance. Species that require large patches or habitat interiors could be displaced, while species that prefer woodland edges or openings could benefit. The latter include many of the more widespread and abundant species such as the black-billed magpie, American crow (*Corvus brachyrhynchos*), common grackle (*Quiscalus quiscula*), American robin, and house finch. Of these species, the first three are common predators on eggs and young of other birds, and another woodland edge species—the brown-headed cowbird (*Molothrus ater*)—is a nest parasite (i.e., lays its eggs in the nests of other birds) that can seriously affect certain other songbird species. These impacts, in conjunction with existing fragmentation and disturbance within and adjacent to the FMMDP area, would reduce the value of the largely unfragmented habitat interiors available to migratory birds.

Use of heavy equipment would displace birds away from preferred habitats for a short time due to noise and human presence. Displaced individuals are less likely to nest due to other suitable habitat already being occupied and may be subject to reduced survival if the areas into which they are displaced are less suitable. Research indicates that noise associated with development and production activities can also lead to lower avian diversity and density in both adjacent and distant areas (Forman 2000, Forman and Deblinger 2000). Noise can decrease usable habitat for birds by reducing the distance at which courtship or territorial vocalizations by males are heard by potential mates, interfering with territory establishment and defense, mate selection, and reproductive potential.

Clearing of vegetation during the spring nesting season could result in the destruction of nests, eggs, or nestlings. Indirect take (e.g., nest failure) can also occur as a result of disturbance, although reactions vary between bird species. Even birds that do not completely abandon a nest following a disturbance can remain away for a long enough period that the eggs or young are more vulnerable to overheating, chilling, or predation.

The development of water completion pits in the project area may be expected to attract waterfowl and other migratory birds for purposes of resting, feeding, or as a source of water. The extent and nature of the problem is not well defined, but management measures must be conservative and relegated to preventing bird contact with produced water and drilling and completion fluids that may pose a problem (e.g., acute or chronic toxicity, compromised insulation).

These impacts may result in a short-term decrease in the local populations of some species, due to both direct habitat loss resulting from vegetation removal and indirect habitat loss resulting from disturbance. However, none of the BCC species or other migratory bird species present in the area would be expected to suffer significant declines in population size or reductions in the overall viability of the species.

#### Mitigation

Pursuant to BLM Instruction Memorandum 2008-050, all activities resulting in removal, injury, or mortality of vegetation would be prohibited from May 15 to July 15 to reduce impacts to BCC species (Appendix B). An exception may be granted if nesting surveys indicate no nesting BCC species within 10 meters of the area to be disturbed. Another mitigation measure for migratory birds that would be applied as a COA (Appendix B) requires operators to implement measures to prevent use by migratory birds of reserve pits, produced water pits, and evaporation pits, which can cause mortality by exposure to toxic or otherwise injurious fluids.

In addition to the one active Cooper's hawk nest and six inactive hawk nests identified in the 2008 survey, new nests may be constructed in any year. Therefore, BBC is responsible for complying with the MBTA. As noted above, the MBTA defines "take" to include mortality of eggs or young due to abandonment or reduced attentiveness by one or both adults in response to disturbance, as well as direct destruction of an active nest and harassment, injury, or mortality of an adult bird or fledgling. To protect nesting by birds of prey, a COA prohibits construction, drilling, or completion activities within 0.25 mile of any nest structure during the period April 15 to June 15 unless surveys during the nesting season indicate that the nest is inactive (Appendix B). These dates were selected to reflect typical nesting dates for Cooper's and sharp-shinned hawks in this area of Colorado.

#### *No Action*

Under the No Action alternative, the construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrades serving the SR 43-12 pad on private land would continue under COGCC authority. Compared to the Proposed Action, the No Action alternative would have less potential to cause disturbance to migratory birds because of the smaller extent of development. Disturbance to migratory birds would occur as localized, short-term events that are not expected to have a negative impact on the breeding population.

## **Native American Religious Concerns**

### Affected Environment

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

### Environmental Consequences

#### *Proposed Action*

At present, no Native American concerns are known within the FMMDP area. The Ute Tribe (Northern Ute), Southern Ute, and Ute Mountain Ute Tribes were notified of the proposed FMMDP on October 14, 2009. No responses, questions, or requests for additional information have been received as of November 13, 2009. If new data are disclosed by the Ute Tribes, new terms and conditions may have to be negotiated to accommodate their concerns during the implementation phase. New construction always has the potential to damage or destroy unknown culturally sensitive sites. Standard COAs that would mitigate impacts to cultural resources are included in Appendix B.

#### *No Action*

Under this alternative, there would be less development, and therefore a lower potential for impact to unknown Native American resources. Although no direct impacts to cultural resources would occur, cultural resources in the general area would still remain vulnerable to damage from illegal activities and natural processes.

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

### Affected Environment

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

According to the latest species list from the USFWS, the following Federally listed, proposed, or candidate plant species may occur within or be impacted by actions occurring in Garfield County: Colorado hookless cactus (*Sclerocactus glaucus*), Parachute beardtongue (*Penstemon debilis*), Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and DeBeque phacelia (*Phacelia submutica*). Results of 2008 surveys conducted by WestWater Engineering (WWE 2008) indicate that 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 FMMDP occurs for only one BLM sensitive plant species, Harrington's penstemon. 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*

Eight species of Federally listed, proposed, or candidate threatened or endangered vertebrate species occur within Garfield County or may be affected by projects within the County. These species, their status, and their distributions and habitat associations in the region are summarized below:

Canada Lynx (*Lynx canadensis*). Federally listed as threatened. Canada lynx occupy high-latitude or high-elevation coniferous forests characterized by cold, snowy winters and an adequate prey base (Ruggiero et al. 1999). The preferred prey of Canada lynx throughout their range is the snowshoe hare (*Lepus americanus*). In the western United States, lynx are associated with mesic forests of lodgepole pine, subalpine fir, Engelmann spruce, and quaking aspen in the upper montane and subalpine zones, generally between 8,000 and 12,000 feet in elevation. Although snowshoe hares are the preferred prey in Colorado, lynx also feed on other species such as the mountain cottontail (*Sylvilagus nuttallii*), pine squirrel (*Tamiasciurus hudsonicus*), and blue grouse (*Dendragapus obscurus*).

The U.S. Forest Service (USFS) has mapped suitable denning, winter, and other habitat for lynx within the White River National Forest (WRNF), portions of which are adjacent to BLM lands within the GSFO. The mapped suitable habitat in the WRNF comprises several areas known as Lynx Analysis Units (LAUs). Several LAUs border BLM lands along the I-70 corridor from east of Wolcott to west of DeBeque. While BLM lands within the GSFO area are generally not suitable habitat, they may support movement by animals dispersing to a new area or, potentially, moving to lower elevations during severe winter weather in search of prey. The FMMDP project area does border the Battlement Creek LAU with suitable lynx habitat to the south.

Razorback Sucker (*Xyrauchen texanus*), Colorado Pikeminnow (*Ptychocheilus lucius*), Humpback Chub (*Gila cypha*), and Bonytail (*G. elegans*). Federally listed as endangered. These four species of Federally listed big-river fishes occur within the Colorado River drainage basin near or downstream from the project area. Designated Critical Habitat for the razorback sucker and Colorado pikeminnow includes the Colorado River and its 100-year floodplain west (downstream) from the town of Rifle. This portion of the Colorado River lies a few miles north of the project area. The nearest known habitat for the humpback chub and bonytail is within the Colorado River approximately 70 miles downstream from the project area. Occasionally, the bonytail is in Colorado west of Grand Junction, but its range does not extend east from that point. Only one population of humpback chub, at Black Rocks west of Grand Junction, is known to exist in Colorado.

Greenback Cutthroat Trout (*Oncorhynchus clarki stomias*). Federally listed as threatened. The greenback cutthroat trout was not identified on the USFWS list for Garfield County; however, recent surveys have identified a population in Cache Creek, located several drainages east of the project area. The greenback is the subspecies of cutthroat trout native to the Platte River drainage on the Eastern Slope of Colorado, while the Colorado River cutthroat trout (*O. c. pleuriticus*) is the subspecies native to Garfield County and throughout the Western Slope of Colorado. Although the occurrence of greenbacks in Cache Creek and potentially elsewhere in the GSFO and WRNF areas is apparently the result of human intervention (e.g., sanctioned or *ad hoc* transplantation of fish from the Eastern Slope), its status as threatened applies to Western Slope populations. However, because drainages within the project area do not support this species, it is not considered further.

Mexican Spotted Owl (*Strix occidentalis*). Federally listed as endangered. This large owl nests, roosts, and hunts in mature coniferous forests in canyons and foothills. The only extant populations in Colorado are in the Pikes Peak and Wet Mountain areas of south-central Colorado and the Mesa Verde area of southwestern Colorado. Because no known occurrences or suitable habitats are present in the project vicinity, this species is not considered further.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*). Candidate for Federal listing. This secretive species occurs in mature riparian forests of cottonwoods and other large deciduous trees with a well-developed understory of tall riparian shrubs. Riparian areas in the project area do not provide suitable habitat for this species. It also is not known to occur in the cottonwood corridor along the Colorado River a few miles north of the project area; occurrence there is unlikely due to the patchy nature of the stands and the general lack of a tall-shrub understory.

*BLM Sensitive Animal Species*

**Table 14** lists the Colorado BLM sensitive animal species with geographic and elevational ranges and habitat requirements potentially including the project area. These species include the following:

**Table 14. BLM Sensitive Animal Species Potentially Present or Potentially Affected**

Common Name	Habitat	Potential for Occurrence
Fringed myotis	Breeds and roosts in caves, trees, mines, and buildings; hunts over pinyon-juniper, montane conifer, and semi-desert shrubland habitats.	Possible
Townsend’s big-eared bat	Breeds and roosts in caves, trees, mines, and buildings; hunts over pinyon-juniper, montane conifer, and semi-desert shrubland habitats.	Possible
Northern goshawk	Predominantly uses spruce/fir forests but also use Douglas-fir, various pines, and aspens.	Possible – Winter use only
Ferruginous hawk	Hunts in grasslands and semi-desert shrublands; nests on cliffs or trees.	Unlikely – Outside normal range
Bald eagle	Nests and roosts in mature cottonwood forests along rivers, large streams, and lakes.	Present along Colorado River
Brewer’s sparrow	Sagebrush shrublands, mountain parks; may be found in alpine willow stands.	Present
Northern leopard frog	Wet meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches.	Possible – Habitat marginal
Bluehead sucker	Variety of areas from headwater streams to large rivers.	Unlikely – Not known from GSFO
Flannelmouth sucker	Generally restricted to rivers and major tributaries.	Present in Colorado River
Roundtail chub	Generally restricted to rivers and major tributaries.	Present in Colorado River
Colorado River cutthroat trout	Occurs in clear, cool headwaters streams with coarse substrates, well-distributed pools, stable streambanks, and abundant stream cover.	Present in Beaver Creek

Note that some of the species are listed in the table as “Unlikely” due to one or more reasons, mostly associated with the geographic range and habitat requirements of the species in comparison to the location and habitat types of the FMMDP area. The following paragraphs address species not listed as “Unlikely.”

Fringed Myotis (*Myotis thysanodes*) and Townsend’s Big-eared Bat (*Plecotus townsendii*). Both of these species hunt for aerial insects over pinyon-juniper woodlands, montane conifer woodlands, and semi-

desert shrublands such as occur within or near FMMDP. Although they commonly roost in caves, rock crevices, mines, or buildings, they also may roost in tree cavities.

Northern Goshawk (*Accipiter gentilis*). This raptor nests in subalpine spruce/fir or aspen forests but may move to lower elevation woodlands during winter in search of prey.

Bald Eagle (*Haliaeetus leucocephalus*). Removed from the Federal list of threatened or endangered species in August 2007, this large raptor is now considered a sensitive species and remains protected by the Bald and Golden Eagle Protection Act (BGEPA) as well as the MBTA. Bald eagles both nest and roost along the Colorado River a few miles north of the project area, but the habitats of the FMMDP do not provide suitable habitat for anything but extremely infrequent and transitory use while hunting.

Brewer's Sparrow (*Spizella breweri*). This Neotropical migrant inhabits sagebrush-dominated shrublands. Breeding was confirmed in the Beaver Creek area during the survey by WWE in 2008.

Leopard Frog (*Rana pipiens*). This species differs from toads and salamanders by being almost completely limited to perennial aquatic sites. Also unlike toads and salamanders, the northern leopard frog requires areas of good water quality and abundant aquatic vegetation for breeding and of adjacent semi-aquatic vegetation for cover when adults disperse short distances to feed. Leopard frogs feed primarily on emergent adults of aquatic insects or on terrestrial insects attracted to the water. They mostly are associated with areas of standing water (ponds and pools). Use of streams is generally limited to slow-flowing reaches and adjacent overflow areas. Leopard frogs seldom occur in ponds that contain fish, which may feed on their egg masses or larvae (tadpoles). Many ponds that appear otherwise suitable are not occupied by leopard frogs because of their isolation from other such areas and the limited ability of the frogs to disperse across upland habitats. None of the streams, wetlands, or ponds in the project area supported northern leopard frogs during project surveys or previous surveys for fish.

Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*). This is the subspecies of cutthroat trout native to the western slope of Colorado. It occurs in headwater streams and lakes in the region, particularly in waters that have not been subject to, and are isolated from, areas where non-native trouts have been introduced for sportfishing. The most recent sampling that took place in July 2007 by GSFO fisheries personnel confirmed the occurrence of CRCT in Beaver Creek. The reach of stream that was sampled overlaps with the FMMDP boundary and was also found to support brown trout (*Salmo trutta*) at a ratio of 3:1 to CRCT.

Beaver Creek is a small second-order stream approximately 3 to 5 feet wide and averaging 1 to 2 feet deep. This creek is in relatively good condition, with a well-developed riparian plant community, including shrubs such as Bebb willow (*Salix bebbiana*), thinleaf alder (*Alnus tenuifolia*), hawthorn (*Crataegus erythrophoda*), and redbird dogwood (*Swida sericea*). Beaver Creek provides water for the Town of Rifle, and stringent resource protection measures are in place to protect the creek.

Bluehead Sucker (*Catostomus discobolus*), Flannelmouth Sucker (*C. latipinnis*), and Roundtail Chub (*Gila robusta*). These native non-game fishes generally have habitat requirements similar to those of the Federally listed big-river fishes described above. Both the flannelmouth sucker and roundtail chub are known to occur in the Colorado River a few miles from the site. While they are very unlikely to occur in streams along the proposed pipeline corridor, they are potentially affected by activities that alter water quality or flow regimes in Colorado River tributaries. The bluehead sucker is not known to occur in the GSFO area.

## Environmental Consequences

### *Proposed Action*

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

The results of the 2008 plant surveys 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 2008 by WWE in all areas of suitable habitat within the FMMDP. Harrington’s penstemon was found throughout the project area in Gambel oak (*Quercus gambelii*)-mixed montane shrublands and mountain big sagebrush (*Artemisia tridentata* var. *pauciflora*) shrublands. The top of Flatiron Mesa has the highest density of plants and widest distribution within the project area. The western portion of the FMMDP has a more dispersed distribution of plants with greater distances between occurrences (WWE 2008).

Flatiron Mesa was designated a Potential Conservation Area (PCA) by the Colorado Natural Heritage Program (CNHP) to protect Harrington’s penstemon and its habitat. PCAs are CNHPs best estimate of the primary area required to support the long-term survival of targeted species, subspecies and/or natural communities. Because this area supports a large population of Harrington’s penstemon, Williams and the BLM worked together to minimize losses of Harrington’s penstemon individuals from the Proposed Action.

Williams originally proposed two pads in the eastern portion of the FMMDP where a large majority of Harrington’s penstemon occurs. The BLM asked Williams to consider combining these two pads into one pad to minimize surface disturbance, habitat fragmentation, and the loss of Harrington’s penstemon. Williams combined the two proposed pads into one location, proposed pad RU 23-5. This pad was located as close to the existing two-track road as possible to minimize ground disturbance from the proposed access road, and was located in an area with a higher density of oakbrush to reduce occupied penstemon habitat. Additionally, during the exploratory phase of this pad, Williams agreed to build the eastern portion of the pad first since a higher density of Harrington’s penstemon occurs on the west side of the proposed pad. If the development phase of this pad would not occur, fewer Harrington’s penstemon would be lost with this approach.

Harrington’s penstemon also occurs around existing pad RU 34-6. Williams wanted to expand this pad in a north-south orientation to drill additional wells. BLM asked Williams to re-orient the pad to avoid the areas with the highest density of Harrington’s penstemon. Williams agreed to re-orient the pad to minimize plant losses.

One of the Fee well pads west of Flatiron Mesa, SR 43-12, also supports Harrington’s penstemon, as does the proposed centralized frac pad on Fee land, RU 11-7. Since Harrington’s penstemon is distributed throughout the area where these two pads are proposed, it was not possible to relocate the pads to unoccupied habitat. Harrington’s penstemon also occurs along the existing two-track road that leads to proposed pad RU 23-5. This road would be upgraded as part of the Proposed Action and a pipeline would be placed adjacent to the road.

Because of the large number of Harrington’s penstemon individuals found during initial survey work, counting 100% of Harrington’s penstemon within the FMMDP was amended by WWE to sampling a

portion of the population. All individuals were counted within randomly placed 1-square-meter (m<sup>2</sup>) quadrats in Section 5. In addition to this data, the BLM (DeYoung and Dawson 2006) conducted Harrington’s penstemon surveys on Flatiron Mesa in 2006. All individuals were counted within randomly placed 4m x 10m quadrats located within a 40 m x 60 m macroplot in the northeastern corner of Section 7.

Results of the BLM survey (2006) indicated an average density of 0.55 Harrington’s penstemon/m<sup>2</sup>. However, DeYoung indicated that this estimate may have been 1.5 times higher than typical densities on Flatiron Mesa due to the fact that the macroplot was placed in an area that appeared to have a higher than average density of penstemon. The adjusted density would result in an average estimate of 0.37 Harrington’s penstemon/m<sup>2</sup> on Flatiron Mesa. WWE’s survey within Section 5 resulted in an average of 0.45 Harrington’s penstemon/m<sup>2</sup>. This density was used to calculate the number of plants that would be directly impacted by the proposed RU 23-5 access road and pad. The BLM’s estimated density of 0.37 Harrington’s penstemon/m<sup>2</sup> was used to calculate the number of plants directly impacted by the remaining proposed development (**Table 15**).

Since Harrington’s penstemon prefers to grow in open habitat types without dense shrub or tree cover, those areas with dense canopy cover were considered unoccupied habitat. Aerial photos of the FMMDP were analyzed and the percent of occupied and unoccupied habitat was calculated. The approximate number of Harrington’s penstemon individuals impacted by the proposed development was calculated by multiplying the disturbance acres by plant density and the percent of occupied habitat.

**Table 15. Estimated Loss of Harrington’s Penstemon in the FMMDP Area**

<b>Pad Number (surface ownership)</b>	<b>Estimated Number Potentially Affected</b>
RU 11-7 centralized frac pad (private)	2,751
RU 23-5 pad, access road, and pipeline (BLM)	17,137
RU 34-6 (BLM)	8,153
RU 42-7 (private)	0
SR 43-12 (private)	2,479
<b>Total Lost on BLM Land</b>	<b>25,290</b>
<b>Total Lost on All Land (including private)</b>	<b>30,520</b>

The Proposed Action would result in both direct and indirect impacts to populations of Harrington’s penstemon present in the FMMDP area. Construction of pads, roads and pipelines as proposed is estimated to result in the potential loss of 30,520 individual Harrington’s penstemon plants within the FMMDP or approximately 1.4% of the estimated population of more than 2,114,000 plants within the project boundary. This would lead to the determination that the Proposed Action is “not likely to result in a loss of viability to the population or cause a trend toward Federal listing.”

A number of indirect effects to Harrington’s penstemon could result from the Proposed Action, including an increase in dust, weed invasion, sedimentation and erosion, and 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 B.

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

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 B.

Cumulatively within the FMMDP, an estimated 25,290 plants would be lost on BLM land, with an additional 5,230 plants lost on private land. The BLM has no jurisdiction over sensitive plants on private land. However, cumulative impacts and losses of Harrington's penstemon are recognized. Until this project, the GSFO has never lost more than 1% of a Harrington's penstemon population from the effects of oil and gas development. Because Harrington's penstemon has a wide range in western Colorado, and because Eagle County is considered the core population of this species, losses of 1 to 2% of a population on the edge of known occupied habitat has not to date caused concern that viability of this species is reduced, or that this species is in jeopardy or that there is a need for Federal listing of this species.

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

Canada Lynx. Because the Proposed Action would not have a significant direct or indirect impact to suitable lynx habitat or affect the ability of lynx to disperse through the area, construction and operation of the proposed FMMDP would have "**No Effect**" on this species.

Greenback Cutthroat Trout, Mexican Spotted Owl. These species are very unlikely to occur in or near the project area, with the possible exception of transitory movement through the area by lynx dispersing between suitable habitats. Therefore, BLM has determined that the project would have "**No Effect**" on these species.

Endangered Colorado River Fishes. Construction activities would increase the potential for soil erosion and sedimentation. Although a minor temporary increase in sediment transport to the Colorado River may occur, it is unlikely that the increase would be detectable above current background levels. In any case, the Federally listed, proposed, or candidate fish species associated the Colorado River are adapted to naturally high sediment loads and would not be affected.

Surface runoff of pollutants from the project area also has the potential to affect Colorado River fishes. Any leaks from trucks, drilling equipment, tanks, or ancillary facilities would be likely to reach the river

during runoff events. To reduce the potential for such contamination, Williams has agreed to a series of mitigation measures, which are outlined in Appendix A.

Additional potential impacts to the endangered Colorado River fishes would be associated with depletions in flows due to use of water from the Colorado River Basin in drilling, hydrostatic testing of pipelines, and dust abatement of unpaved access roads. Reductions in flows in the Colorado River and major tributaries have resulted from evaporative loss from reservoirs, withdrawals for irrigation, and other consumptive uses. These depletions have affected minimum flows, as well as peak “flushing” flows needed to maintain suitable substrates for spawning.

In May 2008, BLM prepared a Programmatic Biological Assessment (PBA) addressing water-depleting activities associated with BLM’s fluid minerals program in the Colorado River Basin in Colorado. In response to BLM’s PBA, the USFWS issued a Programmatic Biological Opinion (PBO) (ES/GJ-6-CO-08-F-0006) on December 19, 2008. The PBO concurred with BLM’s effects determination of “**May Affect, Not Likely to Adversely Affect**” the Colorado pikeminnow, bonytail, humpback chub, or razorback sucker as a result of depletions associated with oil and gas projects.

#### *BLM Sensitive Animal Species*

Of the sensitive species listed in **Table 7** as “possible” or “present” and discussed above, the minor amount of direct or indirect loss of suitable habitat, the transient nature of their potential use of the area, and the brief period of construction-related activities in any given area of the FMMDP combine to result in negligible potential for adverse impacts. The bases for this determination are as follows:

Flannelmouth Sucker and Roundtail Chub. As with the ecologically similar Colorado River endangered fishes described above, these species are adapted to naturally high sediment loads and therefore would not be affected by increased in sediment transport to the Colorado River. Furthermore, protective stipulations for water quality (see Appendix A) would minimize this potential. However, these species are vulnerable to alterations in flow regimes in the Colorado River due to depletion of flows in tributaries, as well as other causes (evaporative losses from dams, withdrawals for irrigation or municipal water supplies, etc.). The proposed FMMDP could minimally affect runoff in the Beaver Creek drainage.

Colorado River Cutthroat Trout. Project design includes boring beneath Beaver Creek, which is the only drainage in the area known or likely to support this native trout subspecies. Ground-disturbing activities outside the buffer zone established for the boring—and outside the buffer zone established to protect the Town of Rifle water supply—are not expected to contribute sediments to the stream due to the distances involved and the intervening upland and riparian vegetation.

Bald Eagle. Although bald eagles nest and roost along the Colorado River a few miles north of the project area, the potential for use of FMMDP or adjacent areas is low. Any such use would most likely be by an individual hunting across large expanses of open upland habitats during winter. The FMMDP would represent a small portion of such potential winter hunting habitat, and the reclaimed grass-forb community would provide better habitat for prey than the current shrubland types.

Brewer’s Sparrow. Although the Brewer’s sparrow was confirmed to breed in the FMMDP, the 60-day TL to prohibit removal of vegetation during the period May 15 to July 15 (see Appendix A) would avoid or minimize the potential for impacts to nesting Brewer’s sparrows. Construction activities outside this period could cause individuals to avoid the disturbance while feeding. However, this impact would be limited in duration at any point along the corridor, and individuals are expected to feed across very large home ranges outside the nesting season, thus minimizing the severity of this potential indirect impact.

Fringed Myotis and Townsend's Big-eared Bat. No caves or other suitable roosting sites occur along the FMMDP. Loss of large trees, potentially also used for roosting, would be negligible. Loss of habitat above which the bats could search for aerial prey would also be minimal, and disturbance due to construction activities would not occur at night when the bats are feeding.

Northern Leopard Frog. If this species were present, it would be vulnerable to the same types of impacts as fishes—i.e., inflow of sediments that decrease water quality for reproduction and for survival of aquatic plants. However, because this species has not been found in streams or ponds in the project area, no direct or indirect impacts are expected to result from the Proposed Action.

#### *No Action*

#### *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*

No Harrington's penstemons would be lost on BLM lands within the FMMDP under the No Action alternative, because no ground-disturbing activities would occur on BLM land. However, an estimated 2,479 Harrington's penstemons would be lost on private lands within the FMMDP due to construction of the SR 43-12 pad and associated pipeline. BLM has no jurisdiction over sensitive plant species on private surface.

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

Compared to the Proposed Action, the No Action alternative would have less potential to cause disturbance to Federally listed, proposed, or candidate species because of the smaller extent of development. Disturbance to the animals would occur as localized, short-term events that are not expected to have a negative impact on the overall population.

#### *BLM Sensitive Animal Species*

The potential for the No Action alternative to affect BLM sensitive species would be less than the Proposed Action because less new surface disturbance would occur. Sensitive fish species are unlikely to be impacted for the same reasons identified for Federally listed fish species. The leopard frog, if present, could be affected as a result of exposure to traffic on roads and pads.

#### Analysis on Public Land Health Standard 4 for Special Status Species

The area where Harrington's penstemon occurs in Garfield County has experienced increasing levels of oil and 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, although populations would be at risk due to increasing oil and gas development.

As a whole, the Colorado River below the FMMDP area—which is Designated Critical Habitat for the Colorado pikeminnow and razorback sucker and also supports the roundtail chub and flannelmouth sucker—provides sufficient riparian vegetation cover to minimize transport of sediments into the river above historical levels. The main factor identified as potentially affecting these fishes is the consumptive use of water from the Colorado River or its tributaries, resulting in decreased flows and adverse modification of critical habitat. Based on overall habitat condition within the landscape area, Standard 4 is being achieved for special status fishes.

For the other special status wildlife species described above, the Proposed Action is not expected to result in a failure of the area to meet Standard 4. However, the Proposed Action would facilitate increased oil and gas development, further fragmenting the habitat, increasing habitat edge and reducing patch size within the watershed. When considered in combination with oil and gas development that has occurred since the last LHA in the area, this Federal action could contribute to a declining trend and further reduce the potential for meeting or maintaining Standard 4 over the long-term.

### **Wastes, Hazardous or Solid**

#### **Affected Environment**

The affected environment for hazardous materials includes air, water, soil, and biological resources that may potentially be affected by an accidental release of hazardous materials during transportation to and from the project area, storage, and use in construction and operations. Sensitive areas for hazardous materials releases include areas adjacent to water bodies, above aquifers, and areas where humans or wildlife would be directly impacted.

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 that 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 responses 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 of in amounts above threshold quantities.

Waste generated by construction activities would not be exempt from hazardous waste regulations under the oil and gas exploration and production exemption of RCRA. Exempt wastes would include those associated with well production and transmission of natural gas through the gathering lines and the natural gas itself.

With the exception of produced hydrocarbons, ethylene glycol (antifreeze), lubricants, and amine compounds, chemicals subject to reporting under Title III of the Superfund Amendments and Reauthorization Act in quantities of 10,000 pounds or more would not be used, produced, stored, transported, or disposed of during construction or operation of the facilities. None of the chemicals that would be used in construction meet the criteria for an acutely hazardous material/substance, or meet the quantities criteria per BLM Instruction Memorandum No. 93-344. In addition, no extremely hazardous substance, as defined in 40 CFR 355, in amounts above threshold planning quantities would be produced, used, stored, transported, or disposed of during construction or operation of the facilities.

Solid waste (human waste, garbage, etc.) would be generated during construction activities and, to a limited extent, during project operations. These would be removed to a landfill or water treatment facility as needed, and all would be removed prior to interim reclamation.

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 that 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 also result in 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 could 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, conditions of approval, 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*

Although the drilling, completion, and production of the 81 Federal wells would not occur under the No Action alternative, the construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrades serving the SR 43-12 pad on private land would continue under COGCC authority. These components of the No Action alternative could create impacts attributed to wastes, both hazardous and solid, from drilling the eight Fee wells.

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

### **Surface Water**

#### **Affected Environment**

The FMMDP covers portions of two USGS 6<sup>th</sup>-code hydrologic unit watersheds: most of the project area, including the portion where all proposed activities would occur, is within the Colorado River below Cache Creek unit, while the southeast portion of the FMMDP lies within the Colorado River at Silt unit. The FMMDP area drains toward three different streams, each of which empties directly into the Colorado River approximately two miles north of the project area's northern boundary. The western portion of the project area, including most of the disturbed area, drains west toward Beaver Creek; the northern portion, including the RU 23-5 pad site, drains north toward Helmer Gulch; and the southeast portion drains toward Ramsey Creek.

According to the *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission [WQCC] Regulation No. 37) (CDPHE 2007), the unnamed ephemeral drainages that drain most of the project area are within segment 4a, which includes most tributaries to the Colorado River from its confluence with the Roaring Fork River to a point immediately below its confluence with Parachute Creek. Following is a brief description of segment 4a.

- Segment 4a – 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.

Beaver Creek crosses a portion of the project area; this creek is within WQCC segment 7, which includes the mainstems of several perennial streams within the same area covered by segment 4a. Following is a brief description of segment 7.

- Segment 7 – This segment has been classified as aquatic life cold 1, recreation 1a, water supply, and agriculture. Aquatic life cold 1 indicates that this water course is currently capable of sustaining a wide variety of cold water biota, including sensitive species, or could sustain such biota but for correctable water quality conditions. Recreation class 1a refers to waters with existing primary contact uses. Water supply and agriculture are as described for segment 4a.

All streams within segment 4a are on the State of Colorado's 303(d) List of Water Quality Limited Segments Requiring TMDLS (CDPHE, WQCC Regulation No. 93) (CDPHE 2006a) for naturally high levels of selenium; no streams within segment 7 are on this list. No streams in the project area are on the State of Colorado's Monitoring and Evaluation List (CDPHE, WQCC Regulation No. 94) (CDPHE 2006b) or the State of Colorado's Stream Classifications and Water Quality Standards (CDPHE, WQCC Regulation No. 37) (CDPHE 2007). The USGS has collected limited surface water flow and quality data at sites along Beaver Creek near the project area (USGS 2007b). Data were also collected from the Colorado River below the project area near Rulison in 1977 and 1978 (summarized in **Table 16**).

**Table 16. Selected Water Quality Data for Two Sampling Locations near the FMMDP Area**

Parameter	Beaver Creek near Silt, CO; USGS Site #09092500; Date: 10/8/1976	Colorado River below Rulison, CO; USGS Site #09092570; Date: 4/8/1977
Instantaneous discharge (cfs)	2.6	1560
Temperature, water (°C)	10.0	11.0
Field pH (standard units)	8.6	8.1
Specific conductance (µS/cm/cm at 25°C)	950	1200
Calcium (mg/L)	74	74
Magnesium (mg/L)	17	17
Sodium (mg/L)	110	160
Sodium adsorption ratio	3	4.4
Potassium (mg/L)	3.8	4.8
Bicarbonate (mg/L)	170	160
Chloride (mg/L)	150	230
Sulfate (mg/L)	130	160
Selenium (µg/L)	1	1
Dissolved oxygen (mg/L)	10.8	10.4
COD, high level, unfiltered water (mg/L)	21	17.0
Organic nitrogen (mg/L)	0.12 (unfiltered)	0.28 (filtered)
Phosphorus, unfiltered water (mg/L)	0.01	0.02
Source: USGS 2007b.		

No sediment measuring stations are present on the Colorado River or its tributaries near the GGMDP area. The closest downstream station on the Colorado River is near DeBeque, Colorado. A summary of the 2 years of data collected at this station is presented in **Table 17** (USGS 2007a). The closest upstream station is near Glenwood Springs, but data are limited to only eight samples from 1959.

### 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 caused by 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. After this period, reclamation activities would substantially reduce surface exposure, decreasing the risk to surface waters over the long term.

**Table 17. Sediment Yields – USGS Station 9093700  
(Colorado River near DeBeque, CO)**

<i>Maximum (tons/day)</i>	<i>Minimum (tons/day)</i>	<i>Mean (tons/day)</i>	<i>Median (tons/day)</i>	<i>Period of Record</i>
41,300	8.4	1,817.6	267	1974 – 1976
Source: USGS 2007a.				

Although surface waters would be most susceptible to sedimentation over the short term, access roads would remain in place over the life of the wells (i.e., 20 to 30 years) and would channel runoff during periods of precipitation. Sedimentation and stream channel impacts associated with roads would be reduced through the implementation of Best Management Practices (BMPs) and other preventive measures. As proposed, these measures would include limiting cut slope steepness, step-cutting, limiting road grade to 10%, crowning road surfaces, installing culverts and drainage systems, and applying gravel to all new or upgraded BLM roads in the project area to a compacted thickness of 6 inches (Appendix B).

The pipeline crossing Beaver Creek would be buried within BLM Road 8184, which currently crosses the creek within the project area. The operator would notify the BLM prior to installation of this segment of pipeline and ensure that proper BMPs are being utilized to prevent sediment from entering the stream at this location (Appendix B).

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 all wells have been completed, 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. In the event of an accidental release, produced water and condensate would be confined for cleanup in a containment area and would not migrate to surrounding soils or surface waters. Pipelines associated with the transport of these liquids would be pressure tested to detect leakage prior to use. Cuttings pits must be decontaminated to COGCC standards prior to pit closure; the table of applicable standards can be found at [http://cogcc.state.co.us/RR\\_docs\\_new/rules/900Series.pdf](http://cogcc.state.co.us/RR_docs_new/rules/900Series.pdf)

Refer to Appendix B for standard COAs that would mitigate impacts to surface water. Through the use of COAs and BMPs associated with construction activities, prompt interim reclamation, and the implementation of preventive measures associated with the treatment of fluids, impacts to surface waters would be minimized and should be minor.

As described earlier, a portion of the Proposed Action would occur within the City of Rifle municipal watershed. The operators, Williams and ETC, would apply for necessary permits and authorization from the City of Rifle to conduct the proposed work and develop appropriate measures to mitigate impacts to the domestic watershed area. Consultation would occur between the operators, BLM, and City of Rifle to ensure that the Proposed Action and its best management practices would protect the water quality parameters of the watershed (Appendix B).

*No Action*

Although the drilling, completion, and production of the 81 Federal wells and four Fee wells would not occur under the No Action alternative, the construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrades serving the SR 43-12 pad on private land would continue under COGCC authority. These components of the No Action alternative could create water quality impacts, although not to the degree expected with the 93 wells planned in the Proposed Action.

**Waters of the U.S.**

Affected Environment

Section 404 of the Clean Water Act requires a permit from the U.S. Army Corps of Engineers (USACE) prior to discharging dredged or fill material into waters of the United States as defined by 33 CFR Part 328. A USACE permit is required for both permanent and temporary discharges into waters of the United States. New or upgraded stream crossings within the project area would require USACE approval prior to construction.

The existing access road crosses Beaver Creek, which drains directly into the Colorado River approximately two miles north of the project area's northern boundary; it also crosses two unnamed ephemeral drainages to the east of Beaver Creek, both of which empty into Beaver Creek near the northwest corner of the project area and are thus potentially Waters of the U.S.

Environmental Consequences

*Proposed Action*

Improperly designed drainage crossings, in particular undersized or poorly aligned culverts, could result in channel degradation that could include excessive bank erosion at culvert outlets, ponding of flows and excess sedimentation at culvert inlets, and channel scour at both inlets and outlets. Standard and site-specific surface-use COAs listed in Appendix B would be implemented to protect waters of the U.S.

No new crossings of Waters of the U.S. or streams that are potentially Waters of the U.S. are included in the Proposed Action, nor is any pad construction that could discharge fill into Waters of the U.S. Based on the estimated impacts to waters of the U.S., any upgrades to the road and pipeline crossings of drainages within the FMMDP area would be authorized by the USACE under Nationwide Permit (NWP) 14 for linear transportation projects and NWP 12 for utility projects, respectively. NWP 14 allows up to 0.5 acre of surface disturbance at each crossing, including both the channel and associated wetlands. The area of waters of the U.S. to be filled by construction of components of the FMMDP is likely to be less than 0.5 acre.

If detailed project design indicates that an individual crossing would affect more than 0.1 acre of wetlands or other waters of the U.S., the general conditions of NWPs 12 and 14 require pre-construction notification to USACE. A COA listed in Appendix B strongly recommends that the operator obtain a formal jurisdictional determination by USACE prior to any construction that could affect Waters of the U.S., and verification that the impacts do not require a permit or are authorized under an NWP.

### *No Action*

Under the No Action alternative, the only project components that would occur would be construction of, and drilling on, the SR 43-12 well pad on private surface, as well as ETC's upgrading and construction of a gas-gathering pipeline to this pad. Since the existing road and new pipeline accessing this pad would still cross all known and potential Waters of the U.S. described above for the Proposed Action, the No Action alternative would have approximately the same impact on Waters of the U.S. as would the Proposed Action, and would require the same degree of USACE consultation and permitting.

### **Groundwater**

#### **Affected Environment**

The proposed FMMDP project is located within the Colorado Division of Water Resources (CDWR) Water Division 5, the Colorado River Basin Main Stem. Groundwater in this division is generally found in both alluvial and sedimentary aquifers. Unconsolidated alluvial aquifers are the most productive aquifers in the region and consist of boulders, cobbles, gravel, sand, silt, and clay. Alluvial well depths are generally less than 200 feet and water levels typically range between 100 to 150 feet. The thickness of the alluvium tends to be thicker in the lower reaches and basin center where it can accumulate easier but thinner at the basin margins due to increased slopes and higher flow velocities. Well yield is dependent upon the intended use of the well, well construction design, sediment type and saturated thickness. Domestic use wells are limited to 15 gallons per minute (gpm) administratively, while municipal wells are designed and constructed for maximum potential yield.

There are two aquifer units within the Piceance Basin, the upper and lower aquifers, and two confining units. The upper Piceance Basin aquifer is found within the sandstone and fractured siltstone of the Uinta Formation and the fractured marlstone and solution cavities of the upper part of the Parachute Creek Member of the Green River Formation (Robson and Saulnier 1981). The lower Piceance Basin aquifer is found within the lower part of the Parachute Creek Member, and is separated from the upper unit by the Mahogany zone confining unit. The Mahogany zone is located in the upper one third of the Parachute Creek Member. This areally extensive oil shale interval is an important marker bed as well as a potential oil resource that is the focus of continuing research and development. Beneath these two aquifer systems is another confining unit, which consists of the two lower members of the Green River Formation, the middle Garden Gulch Member, and the basal Douglas Creek Member, and the Wasatch Formation. Although some fresh water wells are completed in the Wasatch Formation, the water bearing sands of this formation are considered localized due to the discontinuous lenticular nature of the strata.

These two aquifer systems are bounded on the north by the White River and on the south by the Colorado River, although the Wasatch basal confining unit is present throughout most of the Basin. Below the Wasatch Formation is the Cretaceous aged Mesaverde aquifer. This aquifer consists of sandstone with interbedded shale and coal of the Williams Fork Formation and the marine sands and shales of the Iles Formation. The depth to the top of this aquifer beneath the project area is more than 5,000 feet below ground surface (bgs), far too deep for economic development. Studies of the potentiometric surface performed by Glover et al. (1998) indicate that water from the Mesaverde aquifer does discharge into the Colorado River and its alluvium downstream from the town of Parachute.

The water quality of the Mesaverde aquifer is considered poor due to the presence of the minerals nahcolite ( $\text{NaHCO}_3$ , sodium bicarbonate), dawsonite ( $\text{NaAl}(\text{OH})_2\text{CO}_3$ ), and halite ( $\text{NaCl}$ ), with total dissolved solids (TDS) ranging from less than 1,000 milligrams per liter in many of the basin margins to more than 10,000 mg/L in the central part of the basin (EPA 2004).

The chemical quality of groundwater is dependent on the mineral composition and hydrologic properties of the aquifer. Surface contact, porosity, and rate of water movement all influence water quality. 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 pesticides.

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).

According to the Colorado Division of Water Resources (CDWR), no fresh water wells are found within the FMMDP project area boundary. Twenty registered wells are located within a 0.5-mile buffer of the boundary. The closest of these wells are located just under a mile east of the proposed RU 23-5 well pad, in Section 33, T6S, R93W, and Section 4, T7S, R93W. Wells with accompanying quantitative data listed well depths of 160 feet and water levels of 100 feet or less. Primary use for these five wells is defined as domestic. Six registered fresh water wells are found just over a mile east of the RU 42-7 well pad in Section 9, T7S, R93W. Of these wells, three are monitoring wells and three are domestic-use wells. Well depths ranged between 135 and 320 feet, with water levels of 105 feet or less. Well yields were fair, ranging between 4 and 8 gallons per minute (gpm). Other wells identified within the buffer are shallow as well, two wells identified in Section 18 have well depths less than 12 feet, and are used primarily for stock purposes. Three domestic/stock wells are located in SWSE Section 36, T6S, R94W within 400 feet of Beaver Creek. Only one of the wells is defined by quantitative data, which lists a well depth of 150 feet and a poor water yield of 1 gpm. Surface deposits within the FMMDP area are primarily alluvium and colluvium, so it is likely the wells are completed in alluvial aquifers, typical for this part of the basin.

### 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 it is trapped. Hydrofracturing would be conducted at 5,000 feet or more below ground surface, and would be unlikely to cause impacts to groundwater resources near the surface, such as springs or shallow alluvium. Casing and cementing programs are designed to protect and isolate all usable water zones and potential fresh water zones. 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, as well as preventing shallow groundwater sources from migrating into deeper water zones.

#### *No Action Alternative*

Although the drilling, completion and production of the 81 Federal wells and four Fee wells would not occur under the No Action alternative, the construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrades serving the SR 43-12 pad on private land would continue under COGCC authority. Groundwater resources would still be identified and analyzed during the permitting process and associated mitigation for protection of

these resources would still occur. Proper casing and cementing procedures for the Fee wells would still be implemented in order to protect these resources.

Analysis on Public Land Health Standard 5 for Water Quality

The Proposed Action and the No Action alternative would be unlikely to prevent Standard 5 from being achieved. This is due to the small area of water bodies and riparian areas that would be affected by the project and by the lease stipulations, COAs, and requirements set for permitting by the City of Rifle, COGCC, and USACE.

**OTHER AFFECTED RESOURCES**

In addition to the critical elements, the resources presented in **Table 18** 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 following the table.

**Table 18. Other Resources Considered in the Analysis**

<b>Resource</b>	<b>NA or Not Present</b>	<b>Present and Not Affected</b>	<b>Present and Affected</b>
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
Range 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

The Flatiron Mesa project area is accessible from Rifle, Colorado by traveling approximately 5-6 miles southwest on Garfield County Roads (CR) 320 (Rifle-Rulison Road) and CR317 (Beaver Creek Road), then east on a private lease road in the Beaver Creek Drainage. Public access would not be allowed within the FMMDP area, since access roads to the area cross private lands. The FMMDP area would be

accessed by vehicles serving the oil and gas development, including traffic related to construction, drilling, completion, and well production. Minor additional vehicle numbers would be attributed to livestock grazing operations during the summer grazing season.

The proposed new roads, totaling 1.47 miles, would be constructed to meet standards for the anticipated traffic flow and all-weather requirements.

Proposed roads would be constructed within an average disturbance corridor 35 feet wide, reduced to 25 feet of finished road surface (including bar ditches) after interim reclamation (see **Table 3**). A conventional dozer and/or trackhoe would be used to clear vegetation and large boulders within the proposed limits of disturbance for the planned roads. Earth-moving equipment would be used to segregate and windrow the topsoil along the edge of the proposed road corridor. The road would be constructed using standard equipment and techniques as described in the *Surface Operating Standards for Oil and Gas Exploration & Development – The Gold Book* (USDI and USDA 2007). Such measures would include ditching, draining, crowning, surfacing, sloping, and dipping the roadbed as necessary. A minimum 4-inch layer of gravel would be applied to the road surface to provide an all-weather travelway.

The average road grade would be 10% or less, wherever possible. The 10% grade would only be exceeded in areas where physical terrain or unusual circumstances require it. Minimum horizontal curve radii would be 100 feet. Where terrain would not allow a 100-foot curve radius, the curve would be widened. Road construction would result in approximately 5.03 acres of short-term surface disturbance. Following interim reclamation, the long-term surface disturbance associated with roads would be approximately 4.45 acres (see **Table 3**).

Crossings would be designed to minimize siltation and the accumulation of debris in the drainage crossing. Water diversions including cut-outs would be placed at frequent intervals along access roads to prevent the erosion of drainage ditches.

Traffic use counts are not available for the existing private road accessing the FMMDP area. Its present use would be classified as low with traffic related to accessing the existing Williams and EnCana well pads in the area.

### Environmental Consequences

#### *Proposed Action*

Garfield County's preferred County Road haul routes would be used, and Williams would be restricted from using other County roads for heavy loads (Garfield County Road and Bridge Department 2008). The Proposed Action would result in periods of substantial increases in traffic volume on the preferred haul routes, the existing private field development roads, and the newly constructed roads within the FMMDP area. The Proposed Action would result in a substantial increase in truck traffic. The largest increase would be 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 19**). Once the wells are producing, traffic would decrease to occasional visits for monitoring or maintenance activities, and hauling produced water and condensate. Each well may have to be recompleted once per year, requiring three to five truck trips per day for approximately 7 days.

Increased traffic on County roads may cause temporary conflicts with normal traffic, including travel delays and increased vehicle collision rates. Project traffic would also cause an increase in fugitive dust and noise and an increased risk of collision with wildlife. Degradation of County, private, and BLM roads may occur from heavy equipment, resulting in increased maintenance and safety management.

Existing field development roads would be maintained and resurfaced as needed with minimum 4-inch layer of gravel; the proposed new roads, totaling 1.47 miles, would be constructed and graveled to meet standards for the anticipated traffic flow and all-weather requirements. Use of multi-well pads and directional drilling minimizes the need for additional access road construction.

**Table 19. Traffic Associated with Drilling and Completion Activities**

<b>Vehicle Class</b>	<b>Trips per well</b>	<b>Percent of total</b>
16-wheel tractor trailers	88	7.6%
10-wheel trucks	216	18.6%
6-wheel trucks	452	39.0%
Pickup trucks	404	34.8%
Total	1,160	100.0%
Source: BLM 2006. The drilling and completion period is approximately 24 days per well.		

Average road grade would be 10% or less, wherever possible. The 10% grade would only be exceeded in areas where physical terrain or unusual circumstances require it. Minimum horizontal curve radii would be 100 feet. Where terrain would not allow a 100-foot curve radius, the curve would be widened. The finished travelway width would 25 feet. Crossings would be designed to minimize siltation and the accumulation of debris in the drainage crossing. Water diversions including cutouts would be placed at frequent intervals along access roads to prevent the erosion of drainage ditches.

Roads would be constructed and maintained to an appropriate standard to accommodate their intended functions, as described in the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (USDI and USDA 2007) and BLM Handbook 9113 - *Roads Manual*. Mitigation measures (Appendix B) would be required as conditions of approval to ensure adequate dust abatement, coordination with Garfield County Road and Bridge Department, and road maintenance occur.

*No Action*

Under the No Action alternative, one private well pad (SR 43-12), eight Fee wells, and the associated buried pipeline on private land would still be implemented. Impacts on private lands would be approximately 9% of the impacts under the Proposed Action, assuming that the impacts are proportional with the number of wells drilled and operated under the No Action alternative (8 wells) versus the Proposed Action (85 wells).

**Geology and Minerals**

Affected Environment

The FMMDP area is located within the Piceance Basin, a broad elongate structural basin located at the eastern edge of the Colorado Plateau. The basin is highly asymmetrical, more than 100 miles long with an average width of 60 miles. Dissected by the Colorado River, the basin is divided into northern and southern sections. The southern Piceance Basin is marked by two erosional remnants, Grand and Battlement Mesas. Rocks of the basin dip inward from the margins toward the deepest part of the basin, which is at the northern end near the White River Uplift.

The northern part of the basin is bounded by the Colorado River on the southern end, and the White River on the northern end. The Grand Hogback Monocline delineates the eastern edge of the basin, where the

target Cretaceous Mesaverde sedimentary sequences are found in nearly vertical complete section. Sediments of the Mesaverde Group, composed of marine sandstones and transitional to non-marine beds of coal, shale, and sandstone were deposited marginal to the great Cretaceous seaway (Warner 1964) that occupied much of the Western Interior region during that time. The oscillating shoreline of this sea, due to the rise and fall of sea level and uplift and subsidence of the land, left behind a complex series of transgressive and regressive sequences that define the maximum seaward extent of the ancient coastline. This depositional environment is also the source and trapping mechanism that defines the extensive gas accumulation of the Williams Fork Formation.

Sediments of the target Mesaverde Group can be divided into two main lithologic types, (Young 1960) the lower marine sequence, which intertongues with the Mancos Shale, and the upper non-marine sequence consisting of a series of shales, sandstones, and coals. The Williams Fork in this area is estimated to be 4,000 to 5,000 feet thick. The upper 1,500 – 2,400 feet of the Williams Fork consists of undifferentiated sandstones and mudstones that were deposited in a fluvial/ flood plain type environment. The lower 500 to 700 feet of non-marine sequences of sandstone, sandy shales, carbonaceous shales and coal were deposited in a coastal plain/shorefront type environment. The coal seams of these lower sequences are believed to be the source rock for the natural gas currently being exploited from the sandstone reservoirs of Williams Fork. Migration of the gas is inhibited by the low permeability and discontinuous nature of the reservoirs (Cumella 2009). Studies suggest that most of these sandstone bodies are smaller than the distance between wells at 10-acre spacing (660 feet) (Pranter et. al. 2009).

Surface deposits within the FMMDP are mapped as unconsolidated Quaternary alluvium and colluvium. Landslide deposits of Pleistocene and Holocene age cover most of the area with the exception of pads RU 23-5, and RU 42-7, which are underlain by older gravels of pre-Bull Lake Age. The Bull Lake glacial period began roughly 200,000 years ago and lasted about 70,000 years. Widely recognized in the southern Rocky Mountains, Bull Lake glaciation took place mostly in the form of valley glaciers and cirques, but in a few cases, such as the San Juan Mountains, small ice caps did develop (Aber 2006).

**Table 20** lists relevant formations found within the FMMDP and their characteristics.

**Table 20. Geologic Formations within the FMMDP Area**

Map Symbol	Formation Name	Age	Characteristics	Location
Ql	Landslide deposits	Holocene & Pleistocene	Large slump blocks of basalt irregularly veneered with young (Pinedale) glacial drift	Mesa sideslopes
Qg	Unconsolidated gravel deposits	Pleistocene	Stream, terrace, and outwash gravels	Mesa summits & sideslopes
Qgo	Old gravels and alluvium	Pre-Bull Lake	Terrace, outwash, and pediment gravels	Mesa summits & sideslopes
Two	Wasatch Formation	Eocene & Paleocene	Variegated red, gray and brown sandstone and siltstone and red, gray and green shale. Basal conglomerate present locally	Outcrops on mesa sides and summits
Kmv	Mesaverde Group	Upper Cretaceous	Sandstone, shale, siltstone, and mudrock with coal beds in the lower Williams Fork	Below the Wasatch Formation and not exposed in project area
Source: Tweto et al. 1978				

The proposed drilling project would target the sandstone reservoirs of the Williams Fork (including the Cameo Coal and unnamed sandstones) between 6,500 and 8,000 feet true vertical depth (TVD). Individual sandstones are stacked and concentrated into 400- to 500-foot-thick potentially productive sequences and distributed throughout a vertical interval of about 3,000 feet with limited horizontal extent. Hydraulic fracturing or “fracing” would be incorporated into drilling scenarios to complete the wells for gas production.

### 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. Most of the wells currently in production are estimated to have a life span of 30 to 35 years. 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 specifically to 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.

#### *No Action*

Under the No Action alternative, eight private wells and their associated facilities would be developed on the new SR 43-12 pad representing 9% of the total number of wells proposed in the Proposed Action.

### **Noise**

#### Affected Environment

The Proposed Action would lie within a rural setting characterized by fairly recent oil and 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 approximately 0.8 mile from the nearest residence, with several residences located less than 1.1 miles away. All residences within 2 miles of any proposed pads or other construction activities are located on Grass Mesa to the east of the project area, which is at a lower elevation than Flatiron Mesa and thus largely shielded from noise impacts by Flatiron Mesa itself.

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 location. Drilling activities are subject to noise abatement procedures as defined in the Colorado Oil and Gas Conservation Commission Rules and Regulations (Aesthetic & Noise Control Regulations), generally 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 involving pipeline or gas facility installation or maintenance, the use of a drilling rig, completion rig, workover rig, or stimulation is subject to the maximum permissible noise levels for industrial zones.

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 21**), construction noise would be approximately 59 dB(A) at 1,000 feet, comparable to those of an active commercial area (EPA 1974).

**Table 21. Noise Levels Associated with Typical Construction Equipment**

Equipment	Noise Level (dB(A))		
	50 feet	500 feet	1,000 feet
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			

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 1,000 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. As stated above, the nearest residence is approximately 4,400 feet (0.8 mile) away.

Traffic noise levels would also be elevated as a consequence of the Proposed Action. The greatest increase would be along access roads during the drilling and completion phases. Based on the La Plata County data presented in **Table 22**, approximately 68 dB(A) of noise (at 500 feet) would be created by each fuel and water truck that travels these roads. Less noise would be created by smaller trucks and passenger vehicles such as pickup trucks and sport utility vehicles. Although the duration of increased noise from this source would be short, it would occur repeatedly during drilling and completion.

Noise impacts would decrease during the production phase. These levels would be less than during the construction phase, but greater than background noise levels. During maintenance and workovers, noise levels would increase above those associated with routine well production. Traffic noise levels would affect residences located along County roads that 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.

**Table 22. Noise Levels Associated with Oil and Gas Production and Development**

<b>Equipment Type</b>	<b>Noise Level at 50 feet (dBA)</b>	<b>Noise Level at 500 feet (dBA)</b>	<b>Noise Level at 1000 feet (dBA)</b>	<b>Noise Level at 2000 feet (dBA)</b>
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*

Under the No Action alternative, most project components included in the Proposed Action would not be approved or constructed, including any new roads, but the SR 43-12 pad and associated buried pipeline on private land accessing eight Fee wells would be constructed. Therefore, emissions of pollutants from vehicle and equipment engines or of fugitive dust from disturbed surfaces that would accompany the Proposed Action would be reduced by at least 90%.

**Paleontology**

Affected Environment

The predominant geologic formations present at or near the surface within the boundary of the FMMDP are Quaternary aged deposits of landslide debris (Ql), and unconsolidated gravels (Qg) and alluvium

(Qgo). Please see **Table 20** in the *Geology and Minerals Section* for a more detailed description of these formations and their characteristics. Occurring in varying thicknesses, these Quaternary sediments are considered Potential Fossil Yield Classification (PFYC) Class 2, defined as having a low probability of fossil occurrence. Class 2 geologic units are not likely to contain vertebrate or scientifically significant invertebrate fossils.

The formation of interest in the southern Piceance Basin with respect to paleontological resources is the Wasatch Formation. The Wasatch is a BLM Condition 4 formation, defined as an area that is known to contain vertebrate fossils or noteworthy occurrences of invertebrate fossils. Fossils are known to occur or have been documented in Condition 4 units, but may vary in occurrence and predictability. The Wasatch formation is mapped within the project area but is isolated to the W2 Section 12, T7S, R94W, west of Beaver Creek. Of the three members into which this formation is divided, the upper Shire Member has yielded significant Eocene mammals. The middle member of the Wasatch Formation, the Molina Member is considered unfossiliferous (Donnell 1969), but according to Murphy and Daitch (2007), all members of the Wasatch Formation contain vertebrate fossils in varying abundances. The basal Atwell Gulch Member has yielded collections of Paleocene vertebrates and leaves from the Paleocene-Eocene boundary placed near the top of the member contact (Donnell 1969).

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, crocodylians, gars and other fishes, freshwater clams, gastropods (snails), and other invertebrates (BLM 1999).

### Environmental Consequences

#### *Proposed Action*

Although the Wasatch Formation occurs in a small portion of the FMMDP, no fossil localities have been identified within those surface exposures. Alluvial and colluvial deposits are the predominant surface sediments, but the Wasatch Formation is the underlying stratigraphic unit. The thickness of the Quaternary gravels cannot be accurately determined, but construction activities have the potential to adversely affect important fossils that may be present in the underlying Wasatch Formation. The greatest potential for impacts is associated with excavation of shallow bedrock that may be unearthed during well pad and accompanying facilities (especially pipeline) construction. In general, alluvium, colluvium, and other unconsolidated sediments are much less likely to contain well-preserved plant and animal remains than intact bedrock.

An examination of the BLM paleontology database indicates that there are three clustered fossil discovery sites found within the FMMDP project area boundary. Isolated in the NENE of Section 32, T6SR 93W more than 0.75 mile northeast of the proposed RU 23-5 well pad, are two sites located approximately 283 feet apart along an unnamed drainage. The third site is located approximately 900 feet southeast of those sites. Onsite inspection of all the well pads revealed no areas of bedrock exposed within the proposed disturbance footprint. A thick vegetative cover obscured all of the proposed well pad sites. Colluvial detritus was draped over all surface exposures and interspersed within the thick cover by mountain shrubs. Fossil resources are not expected to be impacted by the Proposed Action. In the unlikely event that paleontological resources are encountered during the construction phase, the standard paleontological COA would be attached to the APDs (Appendix B).

*No Action*

Under the No Action alternative, the SR 43-12 well pad, pipeline and its associated facilities would still be implemented. Impacts on private lands would still occur with the possibility of encountering paleontological resources during the construction activities. If this did occur, the mitigation of those resources would be under the authority of the private landowner.

**Range Management**

Affected Environment

The proposed wells would be located in the Beaver-Mamm Allotment. **Table 23** summarizes the permitted grazing use on the allotments.

**Table 23. Range Management Allotments.**

<i>Allotment</i>	<i>Permittee</i>	<i>Livestock Kind &amp; No.</i>	<i>Season of Use</i>	<i>% PL</i>	<i>AUMs</i>
Beaver Mamm # 08104	Jack Farris	Cattle 79	05/15 – 10/15	100	400
	George Ferguson	Cattle 45	05/15 – 10/15	100	228

Environmental Consequences

*Proposed Action*

Oil and gas development within the proposed FMMDP would result in approximately 53.21 acres of total short-term surface disturbance (see **Table 3**). This disturbance and resulting loss of vegetation would last for approximately three to five years or until grasses and forbs seeded during interim reclamation became productive. Rehabilitation of the short-term disturbance areas would replace some of the livestock forage. Long-term vegetative loss from the working areas of well pads and roadways, amounting to 11.2 acres within the MDP boundary would be expected to last 20 to 30 years until the wells lost their productivity. With final reclamation of the wells sites and access roads, the productivity of the rangeland would be reestablished.

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 FMMDP 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.

Additional effects from oil and gas development on livestock grazing could include increased human activity, spread of noxious weeds, and livestock mortality as a result of collisions with vehicles. Biological stress could be induced on the grazing cattle from the increased development activities and result in changes in use patterns and trailing routes.

An increase in human activity related to development and maintenance of the developments would cause cattle to avoid certain areas of the allotments. However, livestock may also benefit from improved access. New roads and pipelines would open access to areas of the allotments that are difficult for livestock to access because of thick brush cover. Improvement in livestock distribution could 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. The section on **Invasive Non-native Species** describes in detail the effects of invasive species and lists mitigation measures related to the Proposed Action.

It is not anticipated that the impacts from implementation of the Proposed Action would require adjustment of the livestock stocking rate. The level of forage utilization would be monitored on the allotment and if necessary, adjustments in livestock use would be made to protect land health.

Range improvements (fences, gates, reservoirs, pipelines, etc.) would be avoided during development of oil and gas resources to the maximum extent possible. If range improvements are damaged during exploration and development, the operator would be responsible for repairing or replacing the damaged range improvements. A new cattleguard with bypass gate would be installed into the existing boundary fence between Youberg and BLM located along the proposed RU 42-7 access road. A perimeter fence capable of holding grazing livestock would be installed around newly constructed well pads prior to pad construction to help provide a barrier to grazing livestock during the drilling/completion phase and mitigate potential surface impacts to surrounding special status plant species and habitat (Appendix B).

*No Action*

Under the No Action alternative, there would be no additional developments occurring on public land that would affect the Federal grazing program.

**Realty Authorizations**

Affected Environment

Within the project area, there are numerous existing realty authorizations outlined in **Table 24**. Williams holds a BLM road right-of-way (ROW) (COC59787) that allows their use of the existing Flatiron Mesa access road that falls outside the operating oil and gas lease boundary for the RU 34-6 well. Pipeline ROW (COC59786) issued to Williams authorizes their operation of the surface gas pipeline serving the RU 34-6 well. The EnCana road ROW (COC68682) authorizes their road use and maintenance of the existing Flatiron Mesa access across BLM in Sections 6, 7 and 8 to the EnCana K8W pad located on private land in Section 8.

**Table 24. Existing Realty Authorizations within FMMDP area.**

Oil and Gas Leases	Powerlines	Access Roads	Pipelines	Springs
COC36490 COC41916 COC50944 <i>COC57580- Communitization Agreement</i>	COC29423- Public Service Company	COC59786-Williams COC68682-EnCana	COC51003- ETC COC59787- Williams COC66459-EnCana COC66794-EnCana	COC60636

The ETC pipeline ROW (COC51003) covers the Spruce Creek-Beaver Creek gas pipeline system that is presently undergoing expansion under BLM Environmental Assessment (DOI-BLM-CO-N040-2009-0070). The two EnCana pipeline ROWs represent the O18 gathering line (COC66459) and the 24-inch Hunter Mesa Gathering System from Grass Mesa to Rifle (COC66794). Public Service Company (PSCo) holds a 150-foot BLM ROW (COC29423) for the installation, use, and maintenance of an electric

overhead transmission line with associated steel tower supports and access roads. Last, the communitization agreement (COC57580) covers the gas production in Section 7, T7S, R93W.

### Environmental Consequences

#### *Proposed Action*

Potential impacts to the existing BLM rights-of-way (ROWs) from the lease operations proposed by Williams or by the rights-of-way to be authorized to ETC in the FMMDP would be mitigated based on written maintenance and use agreements between Williams, ETC and the existing ROW holders.

As described in the Proposed Action, Williams's proposed RU 23-5 road and ETC's proposed RU 23-5 pipeline would be constructed partially within the PSCo ROW (COC29423). All three parties (PSC, Williams and ETC) would prepare appropriate written agreements for their shared use of the powerline transmission corridor. **Figure 4** shows the PSCo transmission line segment that would involve shared use by Williams and ETC with their proposed construction of the RU 23-5 road and pipeline. **Figure 5** depicts the layout of the proposed RU 23-5 road and pipeline within the transmission line right-of-way. **Figure 6** illustrates the established construction setbacks for the RU 23-5 road and pipeline that was negotiated between the three parties to protect the existing transmission line infrastructure.

Although Williams has a communitization agreement for Section 7, T7S R93W, a BLM road right-of-way would need to be authorized for the existing Flatiron Mesa Access Road across Section 7 and the new RU 23-5 road in Section 8 to cover Williams's use and maintenance of these road segments that serve the RU 23-5 pad and wells. A Sundry Notice would also be issued to Williams for the construction, use, and maintenance of the Flatiron Mesa Access Road including the 300-foot new road segment on public land serving the RU 42-7 pad.

As an independent gas-gathering company, ETC would apply for BLM pipeline ROWs for the various Flatiron Mesa pipeline gathering system upgrades identified in the description of the Proposed Action. The standard and site-specific conditions of approval identified in Appendix B shall be incorporated into the proposed BLM rights-of-way to be issued to ETC.

Laramie Energy II, LLC (Laramie II) has submitted an SF299 right-of-way application to BLM for use and maintenance of the existing Flatiron Mesa Access Road (across Sections 6 and 7, T7S, R93W) and the proposed 300 feet of the RU 42-7 road that would provide access across SESE Section 7 to a planned Laramie II well pad located on private land in SWSW Section 8, T7S, R93W. Laramie II's use of the road ROW would involve coordination and signed use and maintenance agreement with Williams and ETC. A COA specific to the RU 42-7 pad would be included on the Williams APDs and the Laramie II road ROW to provide unabated vehicle access to private lands owned by George Bauer and Grass Mesa Partners in Section 8 (Appendix B).

#### *No Action*

Since no Federal authorizations would be issued under this alternative, the Sundry Notice typically used to authorize the 300 feet of new road construction on public land to serve the RU 42-7 pad would be denied thereby dropping this pad from the No Action alternative. The construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrade serving the SR 43-12 pad on private land would continue under COGCC authority.

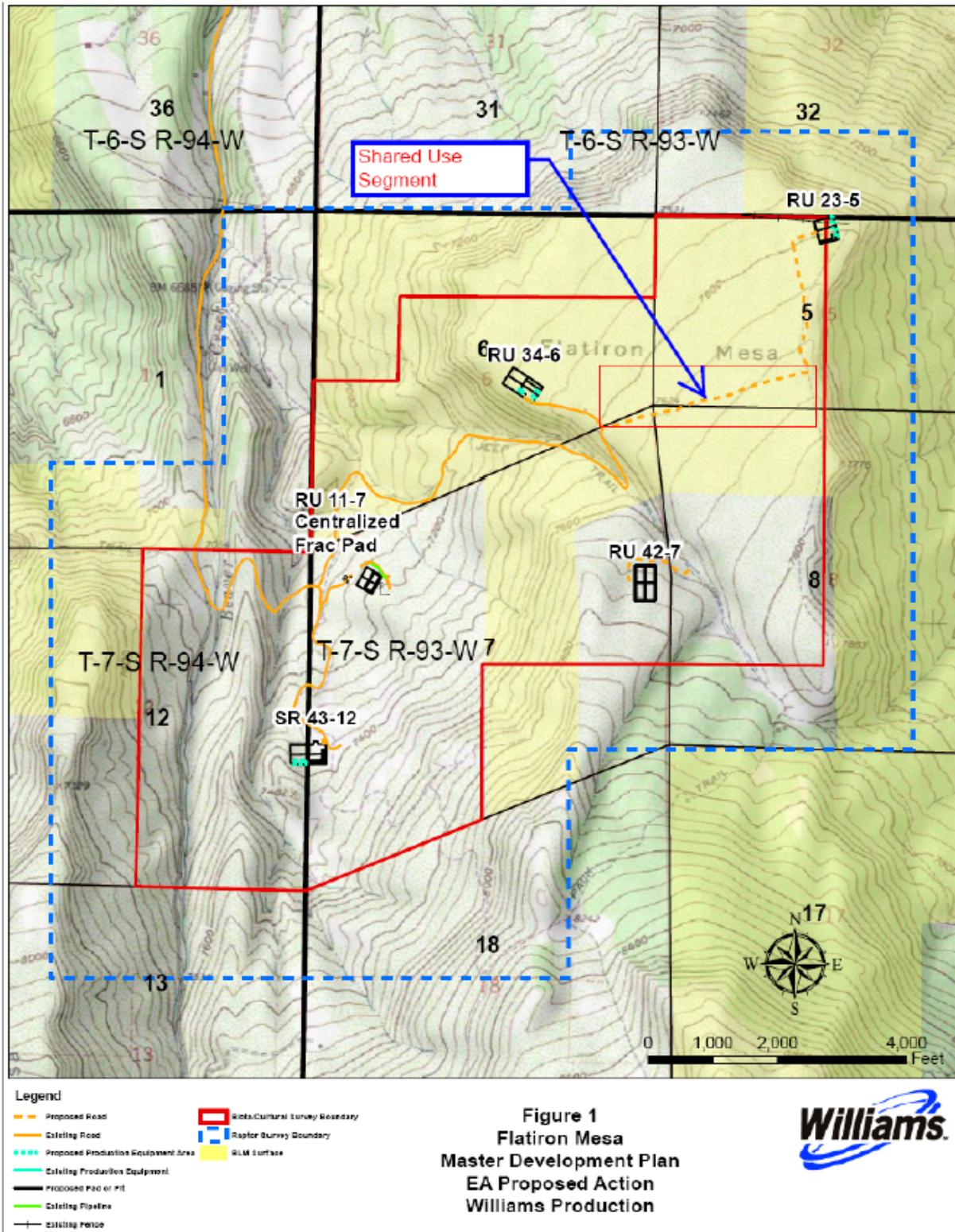


Figure 4. Shared Use Segment of PSCo Transmission Line ROW and RU 23-5 Road and Pipeline

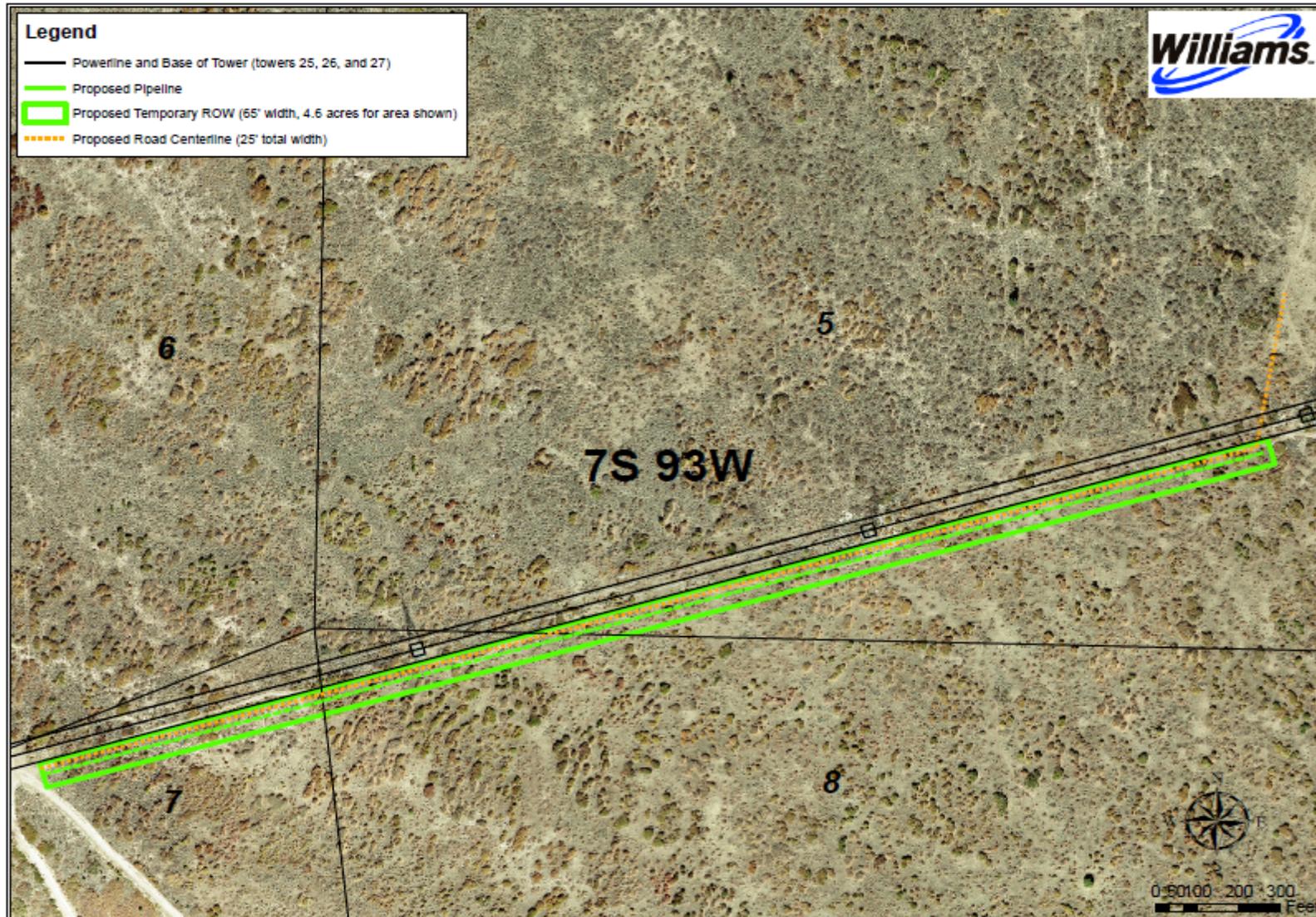


Figure 5. Proposed RU 23-5 Road and Pipeline to be Constructed alongside PSCo Transmission Line

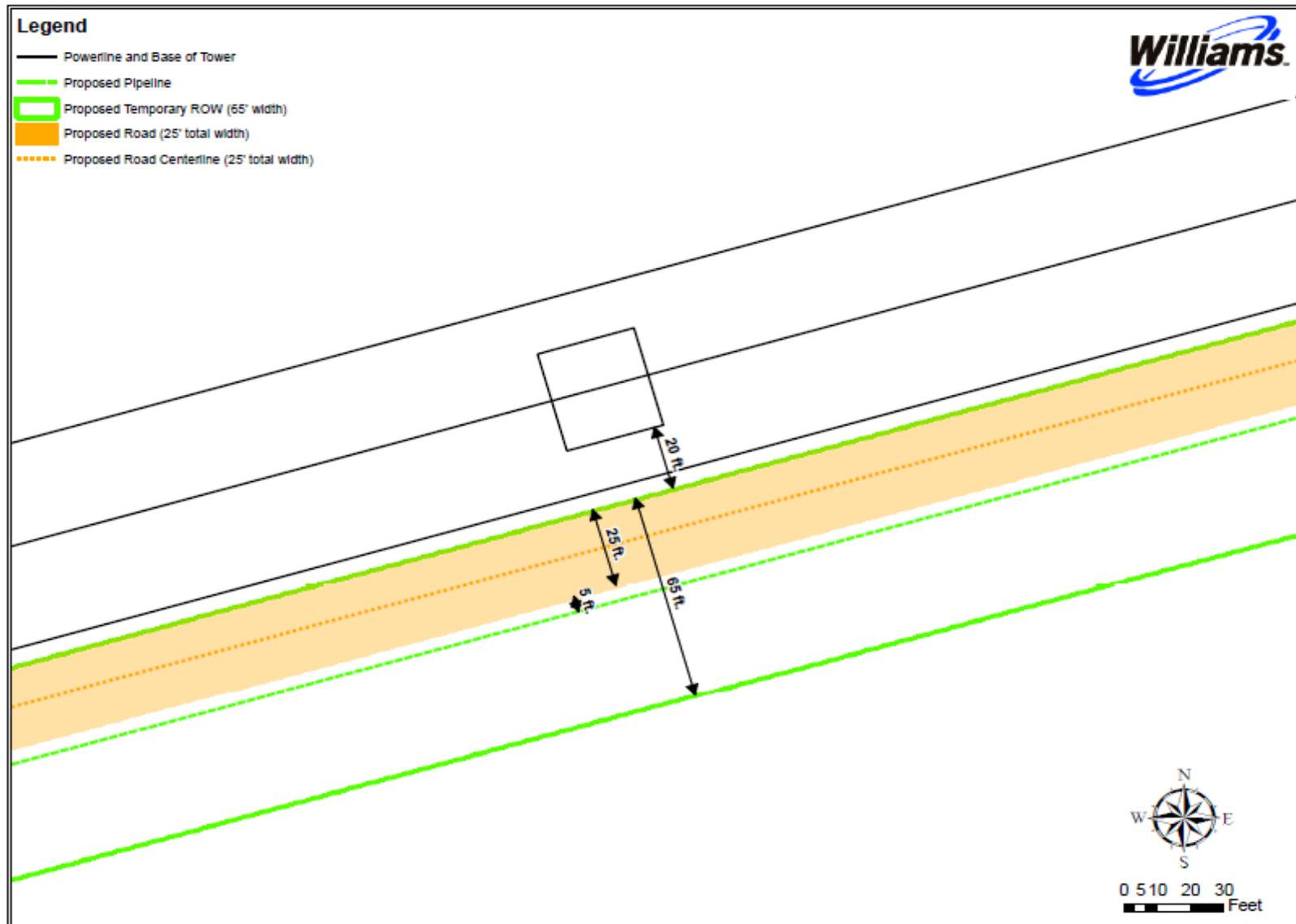


Figure 6. Construction Setbacks from PSCo Transmission Line Towers (#25 to #27) for RU 23-5 Road (tan) and Pipeline (green)

## **Recreation**

### Affected Environment

Since the Proposed Action would occur on public and private lands that have no public motorized access to the area, only limited, if any, recreational opportunities are afforded the general public within the FMMDP boundary. The primary physical access points to the area, although not available to the general public, occur off Beaver Creek Road (CR317) and from Grass Mesa subdivision east of Flatiron Mesa.

One commercial big game outfitter—Mamm Peaks Outfitters (Jeff Mead, 2220 Rosewood Lane, Grand Junction, CO 81505)—has a special recreation use permit (managed by the USFS Rifle Ranger District) that includes NFS land within the FMMDP boundary. It is not specifically known how much permitted big game outfitting use occurs in the general FMMDP area

### Environmental Consequences

#### *Proposed Action*

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 who have booked hunts with Mamm Peaks Outfitters on the public lands included in the FMMDP area. Such impact may result in outfitter locating to different camps during the construction, drilling and completion activities being proposed.

#### *No Action*

Under the No Action alternative, the SR 43-12 pad and pipeline would be constructed and eight private wells drilled on private land. Hunting on private land (Youberg), if allowed, would be controlled and supervised by the landowner.

## **Socio-Economics**

### Affected Environment

The project area is located within Garfield County, Colorado. The population of Garfield County has grown by approximately 2.7% 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%), tourism (10.7%), retail trade (13.7%), and education and health (15.4%). An estimated 13.3% 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% of total employment.

Personal income in Garfield County has also risen, growing 120% from \$513 million in 1990 to \$1.1 billion in 2000. Annual per capita income has grown by 50% during the same period, from about \$17,000 to \$26,000 (BLM 2006), and the average earnings per job in 2005 was approximately \$37,500 (Garfield County 2007). The communities of Parachute, Silt, and Rifle are considered the most affordable for housing; the communities of Battlement Mesa, New Castle, and Glenwood Springs the least affordable where the cost to rent or own similar housing may be 50% or more (BLM 2006).

Activities on public land near the FMMDP area are primarily ranching/farming, hunting, OHV travel, and the development of oil and gas resources. Hunters contribute to the economy because many require lodging, restaurants, sporting goods, guides and outfitting services, food, fuel, and other associated supplies. Big game hunting, in particular, is viewed as critical to Garfield County, and especially the local community economies that depend on BLM and Forest Service public lands where most hunting occurs (BLM 2006). Expenditures by hunters in the Roan Plateau Planning Area have been estimated to be as much as \$1 million annually, with perhaps an additional \$1 million annually of indirect and local expenditures (CDOW 1995, cited in BLM 2006).

The growth of the oil and gas industry in the past 10 years has been increasingly important to local economies (BLM 2006). Gas production in Garfield County has increased tremendously during the past eight years from 70 billion cubic feet (BCF) in 2000 to more than 376 BCF in 2008 (COGCC 2009a). In addition, Garfield County is experiencing the fastest oil and gas development in Colorado with 3,000 drilling permits currently approved (COGCC 2009a). While the number of workers employed in the mining and extraction industry in Garfield County has been shown to be only 1.7% , this number is considered misleading because some oil and gas employment has been incorporated as part of the construction sector statistics instead (BLM 2006). For example, in the year 2005, an estimated 4000 persons were directly employed by gas development companies and their subcontractors in Garfield County (Garfield County 2007).

The Federal government makes “Payments in Lieu of Taxes” (PILT) to County governments to help offset property tax revenue lost of nontaxable Federal lands within County boundaries (BLM 2006). Payments are based on Federal acreage in the County for all land management agencies, including BLM, U.S. Forest Service, U.S. Fish and Wildlife Service, and National Park Service. The amount may also be adjusted based on population and as appropriated by Congress. By formula, payments are decreased as other Federal funds, such as mineral royalty payments, increase. PILT received by Garfield County in the last four years has been as follows: \$1,170,205 in 2004; \$808,348 in 2005; \$1,065,158 in 2006; and \$1,078,087 in 2007 (USDI 2008).

In addition to PILT payments, BLM shares revenue generated by commercial activities on public lands with State and County governments (BLM 2006). Federal mineral royalties are levied on oil and gas production from Federal mineral leases. Oil and gas lessees pay royalties equal to 12.5% of the wellhead value of oil and gas produced from public land. Half the royalty receipts are distributed to Colorado, and the amount distributed to Garfield County in 2002 attributable to oil and gas production was \$14.1 million. In 2001, the amount was \$5.5 million (BLM 2006). These funds are then allocated to fund County services, schools, and local communities.

Property tax revenue from oil and gas development has also become the largest source of public revenue in Garfield County (BLM 2006). In the year 2007, oil and gas assessed valuation in Garfield County amounted to approximately \$1.9 billion, or about 65% of total assessed value. Total tax revenues from property taxes and special district levies were \$130 million. Tax dollar distributions in 2007 were Schools 37%, County 30%, Special Districts 13%, Fire Districts 10%, Colleges 8%, and Towns 2%.

The NEPA process requires a review of the environmental justice issues as established by Executive Order 12898 (February 11, 1994). The order established that each Federal agency identify any “disproportionately high and adverse human health or environment effects of its programs, policies, and activities on minority and low-income populations.” The Latino community is the only minority population of note in the vicinity of the FMMDP area. In 2000, 16.7% of the residents of Garfield County identified themselves as Hispanic or Latino, and this is consistent across the State (17.1%). African Americans, American Indians, and Pacific Islanders account for less than 1% of the Garfield County population, which is below the State levels.

## Environmental Consequences

### *Proposed Action*

The Proposed Action would positively impact the local economies of Garfield County through the creation of additional job opportunities in the oil and gas industry and in supporting trades and services. In addition, local governments in Garfield County would experience an increase in tax and royalty revenues. Some minor economic loss to private landowners or guides may result from the potential displacement of big game and resulting reduction in big game hunting within the project area.

The Proposed Action could result in minor negative social impacts including (1) a negligible decrease in the recreational character of the area (see **Recreation**); (2) reduced scenic quality (see **Visual Resources**); (3) increased dust levels, especially during construction (see **Air Quality**); and (4) increased traffic (see **Access and Transportation**).

### *No Action*

The No Action alternative, with the drilling of the eight private wells from the SR 43-12 private well pad would result in a slight impacts to socio-economics of the general area.

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

### Affected Environment

The area is located on Flatiron Mesa and surrounding slopes that are generally north-facing, at elevations between 6200 and 9000 feet elevation, with gradients ranging from less than 1% to greater than 90%. The proposed project is covered by the *Soil Survey of Rifle Area, Colorado* (USDA 1985). According to this survey, the FMMDP area contains a number of soil types, as shown in **Table 25**.

### *Proposed Action*

The Proposed Action would result in approximately 53.2 acres of short-term vegetation loss and soil disturbance, with a long-term loss of approximately 11.2 acres. In general, the portion of the FMMDP area that would be affected by the Proposed Action contains adequate vegetation buffers and moderate (2% to 30%) slopes that would minimize the potential for sediment transport. However, construction activities would cause slight to moderate increases in local soil loss, loss of soil productivity, and sediment available for transport to surface waters. Potential for such soil loss and transport would increase as a function of slope, feature (pad, road, or pipeline route) to be constructed, and proximity to streams.

Most of the area to be disturbed consists of soils with slight to moderate risk of erosion or slope instability. However, some steeper segments of roads and pipelines would cross soils with severe erosion hazard. In addition, short segments of some slopes in areas with seasonally saturated soils may be steepened beyond 30% prior to interim reclamation. Particular care should be taken at these locations to ensure that proper BMPs, including the COAs listed in Appendix B, are utilized to prevent erosion and slope instability due to construction activities.

**Table 25. Soil Types Within the FMMDP Area**

Soil Association and % of Area	Soil Description	Slope (%)	Erosion Hazard
Morvall-Tridell Complex 63%	Deep, well-drained soils on alluvial fans and mesa sides from 6,500 to 8,000 ft. Surface layer is loam or stony loam up to 10 inches thick; upper subsoil is clay loam to very stony loam about 12 inches thick. Permeability is moderate to moderately rapid, surface runoff is medium.	6-25%	Moderate
Torriorthents-Camborthids-Rock Outcrop Complex 18%	Exposed sandstone and shale bedrock, and shallow to deep soils formed on foothills and mountainsides. Clay to stony loam, covered by rock eroded from outcrops. Contains variable amounts of gravel and cobbles.	15-70%	Moderate to Severe
Cochetopa Loam 5%	Deep, well-drained soil on mountainsides and alluvial fans from 7,000 to 9,500 feet. Surface layer is loam about 21 inches thick; subsoil is stony clay loam and stony clay about 24 inches thick. Both permeability and surface runoff are slow.	9-50%	Severe
Villa Grove-Zoltay Loams 5%	Deep, well-drained soils on mountainsides and alluvial fans from 7,500 to 7,600 feet. Surface layer is loam 4 to 20 inches thick; upper subsoil is clay loam to cobbly clay 11 to 35 inches thick. Permeability is slow to moderately slow, runoff is slow to medium.	15-30%	Slight to Moderate
Torriorthents-Rock Outcrop Complex 3%	Exposed sandstone and shale bedrock, and shallow to moderately deep soils formed over alluvium on foothills and mountainsides. Stony clay to stony loam, covered with stones weathered from outcrops.	15-70%	Moderate to Severe
Bucklon-Inchau Loams 2%	Well-drained soils on ridges and mountainsides from 7,000 to 9,500 feet. Surface layer is loam 3 to 5 inches thick; upper subsoil, where present, is brown clay loam about 15 inches thick. Permeability is slow to moderate, surface runoff is medium.	25-50%	Severe
Cimarron Loam 2%	Deep, well-drained soil formed in alluvium in narrow valleys from 7,500 to 9,000 feet. Surface layer is loam about 4 inches thick; subsoil is silty clay to silty clay loam up to 30 inches thick. Permeability is slow and surface runoff is medium.	2-12%	Moderate
Morvall Loam < 1%	Deep, well-drained soil formed in reworked alluvium on mesas and sides of valleys from 6,500 to 8,000 feet. Surface layer is loam about 5 inches thick; upper subsoil is clay loam about 12 inches thick. Permeability is moderate and surface runoff is slow.	3-12%	Slight
Torrifluents < 1%	Deep soil formed in floodplain alluvium. Surface layer ranges from loamy sand to clay loam and underlying layers are sandy to stony loam and clay loam. Supports riparian vegetation; water table is 2 to 4 feet subsurface.	0-6%	Slight

*No Action*

Although the drilling, completion, and production of the 81 Federal wells and four Fee wells would not occur under the No Action alternative, the construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrades serving the SR 43-12 pad on private land would continue under COGCC authority. Construction of this pad and associated pipeline would cause short-term disturbance of nearly 9 acres, reducing to approximately 1.5

acres over the long term. Thus, this alternative would cause considerably less potential soil impacts as those of the Proposed Action.

#### Analysis on Public Land Health Standard 1 for Upland Soils

Construction of the components of the Proposed Action has the potential to increase erosion and other soil damage. However, based on project design and implementation of the protective stipulations listed in Appendix B, the Proposed Action would not prevent Standard 1 from being met.

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

##### Affected Environment

The primary vegetation types in the FMMDP include Gambel oak-mixed montane shrublands, juniper (*Juniperus osteosperma*) woodlands, and mountain big sagebrush shrublands.

Gambel Oak-Mixed Montane Shrublands – This vegetation type is typically dominated by Gambel oak alone or codominant with serviceberry (*Amelanchier alnifolia*), mountain big sagebrush, 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*), Osterhout’s penstemon (*P. osterhoutii*), 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.

Juniper Woodlands – Juniper woodlands in the FMMDP generally consist of scattered Utah juniper interspersed with big sagebrush. 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, western wheatgrass (*Pascopyrum smithii*), Indian ricegrass (*Achnatherum hymenoides*), and squirreltail (*Elymus elymoides*). Forbs are a minor component.

Mountain Big Sagebrush Shrublands – 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 and typically contain a dense herbaceous component. Common grasses include Indian ricegrass, squirreltail, western wheatgrass, junegrass (*Koeleria macrantha*), slender wheatgrass (*Elymus trachycaulus*), and muttongrass (*Poa fendleriana*). Common forbs include tapertip onion (*Allium acuminatum*), Harrington’s penstemon, 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.*).

##### 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 53.2 acres of vegetation, of which approximately 11.2 acres would not be reclaimed during the life of the wells. With implementation of standard conditions of approval (Appendix B), 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. 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*

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 43-12 pad and associated pipeline would likely be constructed.

#### Analysis on Public Land Health Standard 3 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 B 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 project area comprises a vast portion of Flatiron Mesa including its eastern, northern, and western slopes, which support mountain brush species including Gambel oak, mountain-mahogany, and serviceberry. Open sagebrush parks are found within the mountain brush community creating a vegetative contrast and color mosaic across the landscape.

The natural landscape has been historically altered with the construction of PSCo electric transmission lines, support towers, and access roads across Flatiron Mesa. The western half of the project area has an existing oil and gas development field operated by Williams, Laramie Energy II, and EnCana Oil and Gas

(USA) Inc. with its associated well pads and access roads. ETC operates an existing pipeline system within the project area that gathers and transmits natural gas from the Beaver Creek gas field to Rifle and points beyond. Ranching operations have occurred historically and continue to occur across the project area (see **Range Management**).

Garfield CR317 (Beaver Creek Road), provides a historical farm-to-market access link from the project area to the City of Rifle. CR317 was upgraded for oil and gas development traffic in 1990s when the ETC pipeline was installed down Beaver Creek along the County Road.

The existing gas field developments including well pads, roads, and pipelines and the PSCo electric transmission line are visible from the private development roads within the project area. The project area is not visible from I-70 and viewable from CR317 only in the middleground along the upper reaches of the Beaver Creek watershed near the USFS boundary line.

Because the FMMDP area is partially located on public land and private lands (some with underlying Fee minerals and other with underlying Federal minerals), two distinct landscape management scenarios could accompany the Proposed Action, depending on where a proposed project component is located.

The proposed RU 34-6 pad expansion and associated pipeline improvements and the RU 23-5 pad, road and pipeline construction would occur on public lands (Federal leases COC41916 and COC50944) although the leases fail to identify any visual resource stipulations (see **Table 7**). The Federal lease falls within Class IV Visual Resource Management (VRM) Classification (BLM 1984). The objective of Class IV is to provide for management activities that 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, attempts should be made to minimize the impact of these activities through careful location, minimal disturbance, repeating the basic elements, and best management practices. The protection of VRM classes, landscape character, and scenic quality on private and public lands and split estate is discussed in the FSEIS (BLM 1999a:3-41 to 3-45). The impacts of development are also described (BLM 1999a:4-49 to 4-54).

The planned construction of the RU 42-7 well pad, SR 43-12 well pad, and RU 11-7 centralized frac pad along with the associated road and/or pipeline installations would be located on private land owned by Dr. Youberg. Because these facilities would be located on Fee surface, BLM's visual resource management objectives do not apply, visual values can be protected at the private landowner's discretion through the surface-use agreement with the oil and gas operator. Siting of pads, access roads, and pipelines underwent BLM and landowner consultation during the project's field review process and landowner concerns were directly incorporated into the overall project design.

### Environmental Consequences

#### *Proposed Action*

The Proposed Action would not directly impact any of the key viewing areas or viewsheds described in the FSEIS since the FMMDP area is not within the background viewing area of the I-70 corridor. The FMMDP project area is not visible from CR317, except from the upper reaches of the Beaver Creek watershed. In summary, the VRM Class IV objective allows for landscape alterations on public land, although the project area is not readily visible from I-70 or CR317 and the project design has resulted in hiding most of the Proposed Action from view.

Proposed pipeline upgrades would be buried within existing pipeline disturbances or along new road alignments where that disturbance would be fully reclaimed to help establish desirable vegetation and blend the disturbance with the surrounding mountain brush landscape.

Expansion of one pad and construction of three new well pads with the associated access roads and gathering pipelines would alter the landscape by removing vegetation, exposing bare ground, and creating a distinct line within the landscape. The alteration would be most noticeable in the short term (about 3 to 5 years) until interim reclamation was in place and had reduced the contrast between the areas of disturbance and the surrounding vegetation. In the long term (30 years), the well pads would remain visible in the direct foreground from several points along the field development road east of CR317 because that road passes closest to the well pads.

Overall, the project alterations diminish against the scale of the existing Beaver Creek landscape. Visual impacts would be diminished to the extent that reclamation was timely and successful. Additional reductions in contrast would be realized by painting production facilities the non-reflective natural color (Shadow Gray) and implementing BMPs such as 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 Proposed Action would satisfy BLM's VRM Class IV objectives on the public land. Visual resource COAs are listed in Appendix B.

#### *No Action*

The No Action alternative would result in the construction of the SR 43-12 pad and pipeline on private land and the drilling of eight Fee wells altering the nearby scenic qualities and landscape characteristics on private lands. The SR 43-12 pad and pipeline would not be visible from Interstate 70 or CR317.

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

#### Affected Environment

Beaver Creek is a perennial stream located within the FMMDP project boundary. It is found in Section 12 on the western edge of the project area and is a tributary to the Colorado River. Fish surveys by CDOW and USFS have documented the presence of greenback cutthroat trout—a Federally listed threatened subspecies—in upper reaches of Cache Creek, located several drainages to the east. Another native trout subspecies, the Colorado River cutthroat trout, is known to occur in Beaver Creek. This subspecies is listed as sensitive by both BLM and USFS; see **Special Status Species** for detailed information.

A non-native sportfish, the brown trout (*Salmo trutta*), occupies lower reaches of Beaver Creek. This trout of eastern North America has been widely introduced in mountainous areas of Colorado because of its tolerance for slightly warmer waters than the cutthroat trout and its ability to reproduce successfully in streams with very small flows.

Aquatic macroinvertebrates living in perennial streams such as Beaver Creek during a portion of their lifecycles include larvae of stoneflies, mayflies, and some caddisflies in fast-flowing reaches with rocky or detrital substrates. Both the aquatic larvae and winged adults of stoneflies, mayflies, and caddisflies are probably the main prey for trout in Beaver Creek, along with terrestrial invertebrates that land or fall onto the surface or are carried into the stream in runoff from adjacent uplands. In slow-flowing portions of Beaver Creek with fine substrates, aquatic macroinvertebrates probably include the larvae of midges, mosquitoes, and some caddisflies. These species are able to tolerate relatively warm, turbid, and poorly

oxygenated waters, and their more abbreviated larval stages allow them to reproduce in intermittent streams and in seasonally inundated overbank areas.

### Environmental Consequences

#### *Proposed Action*

At the trenched crossing of Beaver Creek, the width of the construction corridor would be kept the minimum width possible to limit modification to the streambed. Indirect impacts due to runoff from the construction zone on the approach/departure sides of the stream would also be limited by narrowing the construction corridor and not stockpiling soil or other excavated material in proximity to the stream.

#### *No Action*

Because the No Action alternative would not involve removal of vegetation or installation of a pipeline across Beaver Creek, no direct impacts to aquatic wildlife are expected.

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

The Proposed Action would not jeopardize the viability of any aquatic vertebrate species. The project would have no significant consequences on habitat condition, utility, or function or discernible adverse effects on species abundance or distribution at any landscape scale. The public land health standard would continue to be met.

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

#### Affected Environment

##### *Mammals*

Small mammals associated with habitats that dominate the FMMDP area include the rock squirrel (*Spermophilus variegatus*), golden-mantled ground squirrel (*S. lateralis*), least chipmunk (*Tamias minimus*), and Hopi chipmunk (*T. rufus*) in addition to cottontail rabbits (*Sylvilagus* spp.), the bushy-tailed woodrat (*Neotoma cinerea*), and a variety of native mice.

Small carnivores potentially present in the area include the long-tailed weasel (*Mustela frenata*), western spotted skunk (*Spilogale gracilis*), and ringtail (*Bassariscus astutus*) in addition to the nearly ubiquitous striped skunk (*Mephitis mephitis*) and raccoon (*Procyon lotor*). These species are most likely to occur along the drainages, near the margins of dense oakbrush, in pinyon-juniper woodland, or in the small area of aspen and spruce/fir. Larger carnivores expected to occur include the bobcat (*Lynx rufus*) and, along shrubland edges and openings, the coyote (*Canis latrans*). Black bears (*Ursus americanus*) make use of oaks and the associated chokecherries and serviceberries for cover and food, while mountain lions (*Felis concolor*) are likely to occur during seasons when mule deer (*Odocoileus hemionus*) are present.

The mule deer (*Odocoileus hemionus*) is a recreationally important species that are common throughout suitable habitats in the region. Deer fecal pellets were common within and near the corridor during surveys. Although mostly mapped as winter range, the project area also receives use by deer during the summer. Some fawning probably occurs in the general area, particularly in areas such as Flatiron Mesa and along the drainages that provide a suitable combination of cover and forage, as well as abundant water to support lactation. During the fall, including hunting seasons, deer are likely to congregate in the

middle-elevation areas typified by oakbrush/serviceberry, which provides dense cover and is transitional between lower elevation winter habitats (sagebrush, pinyon-juniper, and hay meadows) along the Colorado River valley and higher elevation summer habitats (aspen, spruce/fir, and mountain meadows) on the nearby WRNF.

Another big game ungulate (hoofed animal), the Rocky Mountain elk (*Cervus elaphus nelsonii*), is also present in the area. The CDOW estimates elk herd numbers annually by monitoring hunter kill success and conducting winter aerial counts. Based on herd size estimates derived from CDOW's monitoring, it is clear that elk populations are high both locally and throughout Colorado. In particular, numbers of elk in and near the WRNF are currently above herd objectives in the Data Analysis Units (DAUs) that overlap the project area. Statewide, the elk population trend was generally upward from 1997 to 2004 (26% overall increase), but decreased by 6% from 2004 to 2005. All of the elk herds in the general region surrounding the project area have been actively managed over the past decade to reduce populations to levels within the population objectives for the respective DAUs.

A portion of the project area lies within a large DAU of 2,477 square miles, which includes a small portion of the WRNF (198 square miles, or 8% of the DAU). Approximately 20% of the winter range for this herd occurs on NFS lands, primarily within the Grand Mesa/Uncompahgre/Gunnison (GMUG) National Forest, with the remainder on BLM (25%) or private (54%) lands. Most of the important winter range is on the lower flanks of Battlement Mesa south of Rifle, Silt, and New Castle.

### *Birds*

Perching birds commonly associated with oak-serviceberry habitats include migratory nesters such as the dusky flycatcher, American robin (*Turdus migratorius*), blue-gray gnatcatcher (*Poliophtila caerulea*), Virginia's warbler, MacGillivray's warbler, lazuli bunting, lesser goldfinch, black-headed grosbeak, and spotted towhee) as well as year-round residents such as the black-billed magpie, western scrub-jay), and both the black-capped chickadee (*Poecile atricapillus*) and mountain chickadee (*P. gambeli*). Areas of trees support resident woodpeckers such as the northern flicker (*Colaptes auratus*) and the hairy and downy woodpeckers (*Picoides villosus*, *P. pubescens*) as well as a variety of Neotropical migrant species that nest in abandoned woodpecker holes or in the tree canopies (see **Migratory Birds**).

Birds of prey may nest in cottonwoods, conifers, or very tall oaks, associated with the FMMDP area. Seven nests were located: six in mature cottonwoods along Beaver Creek and one in a tall Gambel oak in the southeastern portion of the project area. One of the nests identified in a survey in 2008 was occupied by a pair of Cooper's hawks, and the inactive nests in the same area along Beaver Creek are probably alternative nest sites for this species. The single inactive nest in a Gambel oak belonged to an unidentified hawk species. Red-tailed hawks are also common in the region but hunt in more open habitats with shorter vegetation such as sagebrush, grasslands, and pastures. Redtails nest in trees or on cliffs. A nocturnal species, the great horned owl, is also a likely resident. Three smaller owls—the flammulated, northern pygmy, and northern saw-whet are potentially present but less likely (see **Migratory Birds**).

One gallinaceous species, the wild turkey (*Meleagris gallopavo*), is also common in mountain shrub habitats, where the acorns, berries, and invertebrate prey in the dense leaf litter provide abundant food.

### *Reptiles and Amphibians*

The project area is above the elevational range of most reptile species known to occur in Garfield County. Species most likely to occur include the western fence lizard (*Sceloporus undulatus*) and gopher snake (bullsnake) (*Pituophis catenifer*) in xeric shrublands or grassy clearings and the western terrestrial garter

snake (*Thamnophis elegans*) along creeks. Other reptiles potentially present along creeks, although more commonly found at lower elevations than the site, are the milk snake (*Lampropeltis triangulum*) and smooth green snake (*Opheodrys vernalis*).

No amphibians are known to occur along the corridor, although some existing stock ponds and slow-flowing portions of the drainages are potentially suitable for the northern leopard frog, a BLM sensitive species known to occur in Spruce Creek, which is two drainages to the west of Beaver Creek (see **Special Status Species**).

### Environmental Consequences

#### *Proposed Action*

The Proposed Action would result in the direct loss of 53.21 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 11.2 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 reestablish.

Williams originally proposed two pads in the eastern portion of the FMMDP where a large unfragmented area of big game winter occurs. The BLM asked Williams to consider combining these two pads into one pad to minimize surface disturbance and habitat fragmentation. Williams combined the two proposed pads into one location, proposed pad RU 23-5. This pad was located as close to the existing two-track road as possible to minimize ground disturbance from the proposed access road, and was located in an area with a higher density of oakbrush and a somewhat degraded vegetation condition from livestock grazing in order to leave more abundant and palatable forage. It should be noted that due to combining two pads into one would result in twice as many wells to drill from the one pad. BLM anticipates that Williams would submit a request for an exception to the big game winter range Timing Limitation. BLM would consider such a request based on then-current conditions and proposed mitigation measures. No exception would be granted without prior consultation with CDOW.

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. When environmental factors result in sensitive wildlife remaining in an area with ongoing disturbance, they are subject to increased physiological stress and changes in their daily activity patterns. These impacts are more significant during 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 outcompete deer for food and cause the deer to shift their patterns of use even farther.

### Mitigation

Federal lease COC41916 includes a Timing Limitation (TL) stipulation for the protection of seasonally important wildlife habitats (big game winter range) that directly applies to the planned construction,

drilling, and completion operations on the RU 23-5 pad and the proposed Williams's access road and ETC pipeline for this pad. The TL precludes construction, drilling, or well completion activities from January 16 through April 29 (Appendix B). Compliance with the TL lease stipulations would reduce potential indirect impacts by precluding development during the critical wintering season. Effects to wildlife would be 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 BLM, upon consultation with the CDOW.

A communitization agreement (COC57580) in Section 7 (T7S, R93W) would obviate Williams's need to acquire a BLM road right-of-way (ROW) within that section. However, Williams would need a ROW from BLM for the portion of the existing Flatiron Mesa access road across Section 7 and the new RU 23-5 road in Section 8. ETC would need a ROW from BLM for installation of new buried pipelines serving the RU 23-5, RU 34-6, and RU 42-7 pads. Existing road and pipeline ROWs in Section 6 initially obtained for the existing RU 34-6 pad do not have a big game winter timing limitation identified.

To minimize the impact of construction and drilling activities during the peak of the winter season, a COA would be applied to rights-of-way for roads within leases COC41916 and COC50944 from January 16 to April 29 (Appendix B). This TL would not preclude the use of these roads for regular operations and maintenance activities. To further reduce impacts to wintering big game, BLM encourages operators to use remote sensing for production monitoring and, to the extent practicable, conduct routine monitoring or maintenance activities between 9 a.m. and 3 p.m.

Raptor nest surveys in the project vicinity in 2008 resulted in the location of an inactive raptor nest structure approximately 0.25 mile from the SR 43-12 and RU 13-7 pads. To protect nesting raptors, a 60-day TL would be applied as a COA to prohibit initiation of construction, drilling, or completion activities at these pads during the period May 1 to July 1. An exception to this TL may be granted for any year in which a subsequent survey documents that the nest is inactive (Appendix B).

In addition to these protective stipulations and COAs, aspects of the Proposed Action, including best management practices (BMPs) to which Williams has committed, would also reduce the severity of adverse impacts to terrestrial wildlife. These include the following:

- Williams would implement BMPs consistent with its environmental programs and in accordance with recommended State and Federal guidance and regulations. Where feasible, existing disturbed areas would be used to the maximum extent practical.
- Well pad locations, access roads, and ancillary facilities would be located, constructed, and maintained to avoid or minimize disturbance to natural and cultural resources, including perennial and intermittent streams, wetlands, and wildlife.
- All well pads, access roads, and ancillary facilities would be located in such a manner as to avoid or minimize wildlife habitat fragmentation.
- During development phase, frac and flowback water would be piped to the RU 11-7 frac pad from all four well pads in the MDP, reducing truck traffic. Only recycled water would be used for fracing to minimize water usage.
- Where possible, the gathering system would be located adjacent to access roads.
- Pipelines would undergo reclamation as soon as possible after construction to minimize short- and long-term disturbance areas.

- During construction of all buried pipelines, surface disturbance would be avoided in the topsoil stockpile area by clearing vegetation with a hydroaxe or similar equipment that would leave the root structure of the existing brush species intact and readily available for resprouting and regrowth.
- 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 or in a clustered area in individual well pads.
- Following development of all wells within a prescribed area, existing gates and fences would 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 within the FMMDP area, as access roads to the area cross private lands.
- Noxious weeds and other undesirable plant species inadvertently introduced due to soil disturbance during construction activities would be monitored and treated over the life of the project by methods approved by the BLM. 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.
- 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 completion of all wells proposed on a pad, Williams would stabilize the disturbed area by re-contouring, mulching, providing run-off and erosion control, replacing topsoil, and seeding with BLM-prescribed native seed mixes (or landowner requested seed mix on Fee surface), and conducting weed control, as necessary. In cases where the exploratory drilling and development drilling on a single pad occur more than 1 year apart, slopes would be re-contoured to the extent necessary to accommodate seeding, and BLM required or landowner requested seed mixes would be applied to stabilize the soil between visits.

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

For the GSFO, the current land use plan (USDI 1999) requires operators to implement measures to reduce impacts to winter range if developments reach a predetermined level:

*“Within high value or crucial big game winter range, the operator is required to implement specific measures to reduce impacts of oil and gas operations on wildlife and wildlife habitat....Measures to reduce impacts would generally be considered when well density exceeds four wells per 640 acres, or when road density exceeds three miles of road per 640 acres (USDI 1999:15).”*

The threshold analyses for well pad and road density for proposed and existing developments within the boundaries of the FMMDP show a total of five (one existing and four proposed) well pads within the FMMDP, for an average of one pad per 798 acres (0.8 pads per 640 acres). The 11.6 miles of existing roads and 1.47 miles of proposed new roads within the FMMDP area total 13.07 miles, for an average of 2.09 miles per 640 acres. Therefore, both the pad and road densities are below the mitigation threshold, and additional mitigation is not be required.

*No Action*

Under the No Action alternative, the APDs for the 81 Federal wells and 4 Fee wells associated with the Proposed Action including the construction of the RU 23-5 and RU 42-7 pads and expansion of the RU 34-6 pad would be denied. Construction of the SR 43-12 pad on private surface, drilling of the eight Fee wells on that pad, and installation of the related ETC buried pipeline upgrades serving the SR 43-12 pad on private land would continue under COGCC authority. ETC's installation of new gas-gathering pipelines under BLM right-of-way would also not occur.

For the purpose of comparison, the No Action alternative is associated with the development of only the SR 43-12 Fee pad. Access to the pad would follow existing routes, although the ETC pipeline upgrade would occur. The No Action alternative would represent less direct and indirect habitat loss.

Analysis on Public Land Health Standard 3 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 oil and gas exploration and development, which has resulted in increased road, well pad, and pipeline densities. This physical impact to the habitat is exacerbated when combined with disturbance associated 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 following cumulative impact assessment is for the Proposed Action for a 5-year program of oil and gas development on approximately 3,988 acres of public land, split estate, and private lands located in the FMMDP area of the Piceance Basin near Rifle, Garfield County, Colorado. Generally, cumulative impacts are assessed for four areas of consideration, which include:

- Past, present, and reasonably foreseeable future actions in the project area that could affect the same resources as the project.
- Determine if the impacts of the project and the other actions would overlap in time and geographic extent.
- Determine if the impacts of the project would intensify the impacts of other actions.
- Identify any potentially significant cumulative impacts.

For the last 4 years, the Piceance Basin has experienced an increase in oil and gas development, particularly as a result of the passage of the Energy Policy Act in 2005, authorizing the opening of oil and gas leases throughout the west and creating a mechanism of energy offices to handle regulatory requirements. As a result, the increased availability of resources for domestic exploration increased, as did the level of activity throughout the western United States.

Garfield County has a history of sporadic market-driven energy cycles throughout the last 50 years. Currently, approximately 6,000 wells are in production within the County, most drilled within the last 5 years. Approximately 20% to 25% of these wells involve Federal mineral leases. It is projected that the number of wells to be drilled over the coming years would progress at a slower rate given the decline in rig activity. In Garfield County, approximately 2,900 wells were approved by COGCC in 2008, with an additional 1,247 wells approved as of August 18, 2009 (COGCC 2009b). These past, present, and anticipated future oil and gas activities are located in the project area and are considered within the allowable regulatory right of access.

Williams is proposing to drill a total of 93 gas wells on four pads within an area of 3,988 acres, designed and located with an effort to reduce visual and environmental impacts. The Proposed Action is a small percentage of the projected activity within the County, particularly within the next several years.

Cumulative impacts would primarily be observed and measured as surface disturbance or the loss of vegetation. The removal of vegetation would affect soil erosion, visual resources, livestock, and wildlife habitat. The impacts to soil erosion would be primarily short-term during construction and drilling operations. Long-term erosion of a lesser magnitude would occur as a result of the construction of the new roads, drainage ditches, and well pads. Removal of vegetation for well pad and road construction would be a long-term visual impact for the life of the producing well. The loss of the vegetation for the anticipated life of a producing well (estimated at 20 years) would be a long-term impact to livestock and wildlife forage production.

The loss of forage production in small isolated locations or linear strips would not generally affect forage allocations in large grazing allotments. After wells are reclaimed, forage production can be restored or increased from forage production levels prior to disturbance. Loss of vegetation would be a reduction in wildlife habitat during 20 years of well production. Wildlife habitat would be restored after reclamation when well pads are abandoned. Reclamation would provide a habitat in a lower ecological stage that could add more diversity in wildlife habitat. In addition to the anticipated surface impacts, the drilling activities would be a short-term impact to recreation, visual resources, and to wildlife that would be temporarily displaced.

Cumulative impacts to special status species—the four Colorado River endangered fishes as well as a variety of BLM and USFS sensitive species—would also be minimal based on project location, habitat types present, the amount of direct and indirect habitat loss, project design elements, and mitigation measures applied as COAs (Appendix B). Although any impacts to special status species would be cumulative to impacts associated with other oil and gas developments and the overall human population growth and associated development in the GSFO area, the incremental additional impacts would be cumulatively negligible.

Cultural and paleontological resources have been surveyed and changes to pad locations have been made as a result. No impacts are expected to cultural resources.

BLM has been working with Williams on locating and screening the proposed developments from the Colorado River Valley Viewshed. BLM has also considered options for arranging surface production

facilities in order to facilitate a phased reclamation. The use of painted facilities, low profile equipment, central tank batteries and offsite production facilities, could also be employed.

Cumulative impacts of future oil field development beyond these projections cannot be accurately estimated at this time as activity is still in the exploratory phase and the level of long-term development is unknown. Actual surface disturbance would depend upon gas reserves and the number of wells drilled. Any additional wells would require separate NEPA analysis and approval. It is likely that a portion of the surface disturbance from future wells would be reclaimed with no long-term impacts to vegetation and that additional specific mitigation measures could be developed to minimize cumulative impacts as needed.

Although impacts to soils, vegetation, recreational use, and wildlife are expected, it can be assumed that the actions proposed would be short term and not contribute significantly to overall degradation of the area's environment. The area is experiencing a significant increase in mineral production on both private and Federal lands. A variety of BMPs would be employed to reducing overall cumulative impacts significantly. Appendix B lists the COAs to be applied and enforced by BLM for activities related to private lands with an underlying Federal oil and gas lease. Appendix C lists the COAs to be applied and enforced for the ETC pipeline rights-of-way to be obtained from BLM.

Due to the relatively low number of wells, roads, pads and pipelines considered in this project, in comparison to the other area activities described previously, cumulative impacts to visual resources, air quality, biological and cultural resources, geology and soils, water resources, and wildlife, and are not considered significant.

## **PERSONS AND AGENCIES CONSULTED**

Kent Rider, Dan Colette, Joe Weaver, Jr., April Mestas, Bryan Hotard – Williams Production  
Jake Latham – Energy Transfer Corporation  
Melinda Lee – Public Service Company  
Wayne Bankert – Laramie Energy II, LLC (Adjacent Mineral Lessee)  
George Bauer – Adjacent Private Landowner  
Dr. Youberg - Private Landowner and Mineral Lessee

## **INTERDISCIPLINARY REVIEW**

This EA was prepared by BLM staff in the Glenwood Springs Field Office, Interagency Energy Team. Table 26 on the following page lists the BLM participants along with their areas of responsibility for the FMMDP project.

**Table 26. BLM Participants in the Preparation of the FFMPD Environmental Assessment**

Name	Title	Responsibility
Jim Byers	Natural Resource Specialist	Team Leader, Access and Transportation, Solid and Hazardous Wastes, Socio-Economics, Range Management, Realty Authorizations
Allen Crockett	Supervisory NRS	NEPA Coordinator
Beth Brenneman	Ecologist	Vegetation, Special Status Species (Plants), Invasive Non-native Species
Karen Conrath	Geologist	Groundwater, Paleontology, Geology and Minerals
John Brogan	Archaeologist	Cultural Resources and Native American Concerns
Dane Geyer	Petroleum Engineer	Downhole COAs
Noel Ludwig	Hydrologist	Soil, Air, Surface Water, U.S. Waters, Noise, Prime Farmland, Wetlands
Sylvia Ringer	Wildlife Biologist	Migratory Birds, Special Status Species (Wildlife and Fish), Aquatic Wildlife, Terrestrial Wildlife
D.J. Beaupeurt	Realty Specialist	Realty Authorizations

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**APPENDIX A**

**Public Comments on the Proposed Action  
and Agency Responses**

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## BLM RESPONSES TO PUBLIC COMMENTS

### Flatiron Mesa Master Development Plan

The BLM Glenwood Springs Field Office received comments from the Colorado Division of Wildlife, Garfield County, and private citizens during the public scoping process for Flatiron Mesa MDP. The comments are presented below, along with BLM's responses.

#### **LETTER FROM J. T. ROMATZKE, AREA WILDLIFE MANAGER, COLORADO DIVISION OF WILDLIFE (NOVEMBER 30, 2009)**

**Comment:** *Minimizing human-wildlife impacts should be a clearly defined and described component of this MDP. Williams's Proposed Action does not describe or suggest any wildlife avoidance, minimization, or mitigation measures. The MDP seems to be lacking detail needed for public knowledge and disclosure of the impacts. It is difficult to examine the impacts to wildlife without knowing site specific information. Such information would examine leases both pre and post of the GSR A1999 FSEIS. Without knowledge of specific lease information and which areas will utilize management prescriptions such as CSUs and NSOs, one can not readily make decisions regarding whether or not the MDP would lead to a Finding of No Significant Impacts.*

**Response:** The document reviewed by CDOW and the public was the Proposed Action, not the entire Environmental Assessment (EA). Specific wildlife impacts and developed mitigation are identified and discussed in the Migratory Bird, Special Status Species, and Aquatic and Terrestrial Wildlife sections of the EA. Specific lease information pertinent to the Flatiron Mesa MDP boundary is described in Summary of Lease Stipulations (Table 7). Mitigation measures to be applied as Conditions of Approval are listed in Appendix B.

**Comment:** *We have found it difficult to access information in the EA, particularly site-specific data. The document does not synthesize the site-specific data into a format that is concise and understandable.*

**Response:** The document available during the public scoping period for review was the Proposed Action for the MDP, not the EA. GSFO's approach for all MDPs is to make the Proposed Action available for public review and comment to help guide the impact analysis and mitigation process to ensure that public issues and concerns are considered and, as appropriate, incorporated into the EA. The actual EA presents resource impacts and developed mitigation (Conditions of Approval) by specific resource.

**Comment:** *The 1999 FSEIS within the Environmental Consequences section also acknowledges the fact that without the ability to mitigate and work with operators that own pre-existing leases the wildlife attributes in the planning area would suffer undue and unnecessary impacts. Private and public land within the boundary of the proposed MDP contains mule deer critical winter range and elk winter concentration area as identified in the Glenwood Springs Resource Area Oil and Gas Leasing and Development Final Supplemental Environmental Impact Statement, January 1999, Chapter 3, pages 3-13 through 3-15 and Chapter 4, pages 4-18 and 4-27.*

**Response:** The Terrestrial Wildlife section of the EA discusses potential impacts to big game, along with a description of measures for avoidance, minimization, or mitigation. This discussion includes citations to the lease stipulations and COAs related to big game winter range.

**Comment:** *Also, more recent CDOW mapping (Natural Diversity Information Source [NDIS], 2009 and on-going) identify areas within the MDP area as containing mule deer critical winter range and elk winter concentration areas. Private and public land within the boundary of the proposed MDP contains*

*Restricted Surface Occupancy Areas, as defined for the COGCC 1200-series rules, for designated cutthroat trout habitat.*

**Response:** See preceding response regarding deer and elk. Cutthroat trout are addressed in the Special Status Species section of the EA, including measures to avoid, minimize, or mitigate impacts.

**Comment:** *Colorado River Cutthroat Trout (CRCT) – There is a population of Colorado River cutthroat trout (State of Colorado Species of Special Concern) that inhabits Beaver Creek. This isolated population can be found throughout 5.81 miles of stream and consists of genetically unaltered individuals with no non-native species present. Considered a “core” conservation population due to its genetic purity, this designation is only given to populations at least 99% genetically pure and is given to approximately 54% of all conservation populations. (computer URL address link - Hirsch, C. L., T. P. Nesler, and S. Q. Albeke 2005. Range-wide status of Colorado River cutthroat trout (Oncorhynchus clarkii pleuriticus) Colorado River cutthroat trout Conservation Coordination Team Report. Craig, Colorado.)*

*In Colorado, the Division of Wildlife has placed the highest priority on protection of native cutthroat populations and as recently as 2006 problems contributing to the decline of the species have included destruction, modification, or curtailment of the species habitat and absence of regulating mechanisms adequate to prevent the decline of the species or degradation of its habitat. Additional development in and around Beaver Creek or any of its tributaries may contribute to a decline in water quality which would, in turn, negatively affect the population of CRCT in Beaver Creek.(computer URL address link - CRCT Coordination Team 2006. Conservation strategy for Colorado River cutthroat trout (Oncorhynchus clarkii pleuriticus) in the States of Colorado, Utah, and Wyoming. Colorado Division of Wildlife, Fort Collins.)*

*Protective stipulations could include, but are not limited to:*

- *No surface disturbance within 300 feet of any water within a Designated Cutthroat Trout Habitat watershed.*
- *Avoid surface facility density in excess of 10 well pads per 10-square mile area (one well pad per section) in Designated Cutthroat Trout Habitat watersheds.*
- *When surface density of oil and gas facilities exceeds 1 well pad/section, initiate a Comprehensive Development Plan (CDP) that includes recommendations for offsite and compensatory mitigation actions.*
- *Bridge stream crossings or use culverts to prevent stream bed damages and the transfer of disease organisms.*
- *Minimize stream disturbances during June and July to avoid impacts to spawning cutthroat trout.*

**Response:** The Special Status Species section of the EA addresses Colorado River cutthroat trout, including project design and mitigation measures to avoid or minimize the risk of potential impacts to this native subspecies.

**Comment:** *CDOW supports the BLM Oil and Gas Lease Stipulations described on page 25 of the FMMDP for the COC41916 and COC50944 leases. CDOW recommends (as a follow-up to timing stipulations) that Williams and subcontractors schedule operational maintenance activities so that site*

visits occur between the hours of 10:00 a.m. and 3:00 p.m. and reduce the number of daily/weekly site visitations between January 16 and April 29 for the life of the project.

**Response:** Comment noted. BLM does believe that it is reasonable to require that all such activities be confined to this narrow window but encourages operators to confine their activities outside the critical dawn/dusk periods to the extent practicable.

**Comment:** CDOW requests that Williams design and implement appropriate pit fencing and netting techniques to protect wildlife. CDOW recommends that development and operations/maintenance pits be fenced to exclude wildlife; wildlife pit exclusion fences must be a minimum of 7 feet high and have a two foot high mesh fence along the bottom to exclude small mammals. All pits that contain production water should be netted to deter birds/waterfowl from entry.

CDOW recommends that Williams and appropriate subcontractors review information about fencing for wildlife, information available from the CDOW at <http://wildlife.state.co.us/NR/ronlyres/B0D65D61-6CB0-4746-94F1-6EE194E1C230/0/fencing.pdf>.

**Response:** Comment noted. The GSFO does not believe that it is practicable to construct wildlife-proof fencing around pits. However, we do require that pits be constructed and maintained in a way that allows any inadvertently entrapped animals to escape. Additional measures are required to reduce impacts to migratory birds for any pits that contain fluids. The latter issue is addressed in the Migratory Birds section of the EA and represented by a COA in Appendix B.

**Comment:** If gas pipelines are pressure tested with water, CDOW recommends that the test water be captured and consigned to a certified disposal facility; CDOW requests that test water not be discharged to any surface drainage due to the potential contaminant issues associated with pipeline pressure test water.

**Response:** Comment noted. BLM has included a COA requiring that any water used to pressure test pipelines be transported to an approved treatment or disposal facility. The Hydrostatic Pipeline Testing section of the EA also addresses this concern.

**Comment:** The 1999 Glenwood Springs Resource Area Oil & Gas Leasing and Development Final Supplemental Environmental Impact Statement (1999 FEIS) enables the BLM staff to attach or condition restrictions to existing and new oil and gas leases. Having the ability to condition new or existing permits offers BLM staff a window of opportunity to develop project specific mitigation measures such as vehicular traffic management, comprehensive vegetation management, and off site mitigation projects, and other mitigation with consistency and full application of the standards and intent described in the 1999 FEIS.

**Response:** CDOW's interpretation of the FSEIS enabling BLM to attach or condition restrictions to existing oil and gas leases is only partially correct. Note that the FSEIS (Chapter 2, Section 2.7 pp. 2-35 through 2-36) clearly states: "BLM cannot restrict operations under the existing leases if such restrictions are not consistent with the leases rights granted. Therefore, BLM's ability to implement some of the mitigation measures contained in the Preferred Alternative is somewhat constrained unless the lease holder would accept such measures on a voluntary basis."

The FSEIS further states: "In order to maximize BLM's ability to achieve the mitigation measures described in the FSEIS consistent with lease rights already granted, BLM would take the following actions for all APDs associated with existing leases." This statement in the FSEIS is followed by a list of various specific actions that would apply to existing leases, including (1) requiring Geographic Area

Proposals—now known as Master Development Plans—to submitted by the operator; (2) requiring the operator to conduct biological or other appropriate inventories; (3) working the operator to identify mitigation measures included in the Preferred Alternative that are appropriate and are consistent with lease rights, (4) using e COAs to require reasonable mitigation for those wildlife habitat impacts to big game winter range attributable to past and proposed oil and gas development within the GAP area; and (5) as an overall goal, reducing indirect habitat loss by managing human activities to minimize disturbance during critical periods.

Appendix B of the EA, and numerous places throughout the Environmental Consequences portions of the text make specific reference to the protections that BLM would apply to the project, pursuant to its regulatory authority as well as to the lease stipulations.

**Comment:** *The CDOW believes that requirements and standards set forth in the FSEIS have been omitted, selectively applied, or changed in a manner that does not reflect the intent of the FSEIS. For example, the FSEIS goes to great length to describe lease stipulations and Conditions of Approval that would be applied to offset or mitigate negative impacts to wildlife (FSEIS, Chapter 2, page 2-35, section 2.7. The proponent does not propose a voluntary winter timing restriction, nor is there language which would lead to offsite mitigation due to four pads per section. Further, the FMMDP makes selective mention of applying the COA that the FSEIS states would be applied to existing leases to protect wintering big game.*

**Response:** In regards to the six specific examples under Management of Existing Leases cited in Section 2.7 on pp.2-35 and -236 of the FSEIS, CDOW's understanding of that section and how it pertains to the Geographic Area Proposal (or Master Development Plan as it is now known) is not entirely on target. Although an item under #5 (p. 2-36) calls for the use of COAs to require reasonable mitigation for wildlife habitat impacts to big game winter range attributable to past and proposed oil and gas development within the GAP area, the EA makes the determination that the well pad densities or road densities are not exceeded and do not trigger the threshold to require offsite habitat mitigation. Further, the big game winter range Timing Limitation stipulations and COA are mentioned and discussed at some length in the document.

**Comment:** *CDOW would be responsive to the idea of working with the operator and BLM to create a wildlife mitigation plan (WMP). CDOW's expectation for a WMP is that it be prepared and implemented in a timely manner and mitigation measures would be sufficient to cover full field development and operational impacts generated by the FMMDP.*

**Response:** As stated above, the pad and road density calculations for the FMMDP did not result exceed the threshold specified in the 1999 FSEIS for requiring compensatory mitigation for indirect impacts. However, Williams is expected to submit a package of mitigation measures at some point to support a request for an exception to the big game winter range TL to allow winter drilling.

**Comment:** *Other MDP concerns include vegetation management and vehicle/traffic management. Prior to facility construction and development Williams should conduct baseline inventories and establish vegetation conditions to provide a basis for post-development habitat restoration across all plant communities throughout the project components including, rights-of-way (ROW), staging areas and supporting facilities and well pads. The 1999 FEIS clearly states that baseline inventories shall be completed prior to development. The MDP does not indicate if this requirement has been met. When final revegetation work is based on baseline conditions, restoration mimics pre-disturbance conditions and provides the best opportunity to minimize habitat fragmentation.*

**Response:** Biological surveys of the FMMDP were completed in 2008 by WestWater Engineering. The results of those surveys and numerous site visits by the BLM plant ecologist/reclamation specialist will help guide both interim and final revegetation of disturbed areas. Additionally, the EA concluded for vegetation and other resources that the project would not prevent land health standards from being met.

**Comment:** *Proper management of topsoil (keeping it alive and viable) is essential to reclamation success. Stockpiled soils should be protected from degradation due to contamination, compaction, and wind and water erosion during drilling and production operations. CDOW recommends using best management practices to prevent weed establishment and to maintain soil microbial activity. In conjunction with soil management, CDOW recommends beginning interim revegetation with the first available (opportunity) growing season and that interim reclamation is started as early as possible on pipeline ROW's and cut and fill locations. Reclamation should be required the same year of the construction (as appropriate). Reclamation results should fully conform to criteria described in Appendix G & I of the 1999 FSEIS.*

**Response:** We agree that reclamation should be conducted as soon as practicable following completion of drilling operations, although this is not necessarily possible in the same year as construction due to the large number of wells being drilled on some pads and various other constraints. Appendix B of the EA identifies COAs for topsoil management and reclamation, including a requirement for timely revegetation.

**Comment:** *The Draft MDP lacks sufficient evaluation with regard to reclamation of impacts to the land by gas development. The DOW believes that evaluation and monitoring of reclamation efforts should be required. An evaluation of past reclamation efforts along with the present condition and status of lands within the planning area with respect to wildlife, water quality and fisheries should be included in the final RMPA.*

*The DOW supports reclamation requirements that are performance based rather than prescriptive. For example, operator will reclaim disturbed ground to achieve x% cover, versus operator will broadcast a certain amount of pounds of a required seed mix. Reclamation success should be monitored and evaluated with a standard methodology. The goals of the reclamation should be clearly defined with regard to timeframe, vegetative cover objectives, soil protection, and wildlife forage. CDOW would like to see the interim reclamation standards (as described in the 1999 FEIS) implemented as a performance criteria that must be met before new well pads can be built and drilled.*

**Response:** A requirement for reclamation monitoring is attached as a COA in Appendix B. The BLM requires operators to monitor reclamation based on the objectives presented in the 1998 Draft Supplemental EIS. Operators are required to submit annual reclamation reports to the GSFO, which must include quantitative data of plant species cover and composition in reclaimed areas. Williams has conducted reclamation monitoring and submitted annual monitoring reports to the GSFO since 2006.

BLM does not believe that it is practicable to require that reclamation performance criteria be met on one pad before the next pad can be built and drilled. This is particularly true in situations such as much of the GSFO area in which meeting the reclamation criteria can require several years due to unfavorable soil and the frequent occurrence of unfavorable climatic conditions, particularly the amount and timing of precipitation.

**Comment:** *The introduction of or spreading of non-native, undesirable vegetation and noxious weeds is a challenge to control in large-scale ground disturbing activities such as this concentrated facility development. Large-scale projects create conditions favorable for the introduction and spread of weeds. Reducing the impact of weeds is a vigilant, and long-term multiple season effort. Weed impacts can be*

reduced by limiting the vehicles associated with the construction component of this project, washing vehicles to prevent weed seed spread, topsoil segregation and management, utilization of certified weed free seed and straw and conducting pre disturbance weed surveys along the ROWs. Weed management activities should be monitored along with reclamation success on at least an annual basis as identified in the 1998 GSR A Oil & Gas Leasing & Development Draft Supplemental Environmental Impact Statement Appendix E, page E-12.

**Response:** The section of the EA on Invasive Non-Native Species and the COAs in Appendix B address weed monitoring and control.

**Comment:** Vehicle traffic during and post construction can create short and long term impacts to wildlife. Development of a comprehensive traffic/travel management plan for the project can provide guidance for employees to avoid and minimize vehicle caused impacts. A comprehensive traffic/travel plan should address carpooling; prohibiting parking outside of designated locations; limiting non essential traffic on the ROW during construction; posting speed limits; restrict or prohibit travel off established roads and outside of proposed and permanent and temporary easement areas, and prohibit motorized access by unauthorized persons; erosion and sediment control measures (including limiting or prohibiting vehicle traffic along the right-of-way easements and roads during excessively wet and muddy conditions); and sign and close ROWs and access roads to public access. CDOW recommends the installation of adequately sized culverts at all new stream crossings, and the upgrading of any existing stream crossings to help reduce the introduction of sediment to waterways.

**Response:** The EA includes a section on Access and Transportation and addresses the unavoidable impacts associated with the need for heavy vehicular traffic during exploration and development, and to a much lesser extent during ongoing production and maintenance. Culvert sizing is addressed in the section on Surface Water. Erosion and sediment control are addressed in the section on Soils. Some of the COAs in Appendix B also address these topics.

**Comment:** Increasing employee's level of awareness about bears would benefit workers and wildlife alike. Williams and subcontractors should establish an education program that focuses on reducing human-bear conflicts including; initiating a food and waste/refuse management program that uses bear-proof food storage containers and trash receptacles; establishing company policies to prohibit keeping food and trash in sleeping quarters; establishing company policies to support enforcement of State prohibition on feeding of bears; and reporting bear conflicts immediately to CDOW. Other operating procedures that are not addressed in the MDP but should be include prohibiting dogs on site, prohibiting firearms on site and abiding by hunting regulations. CDOW can provide educational assistance if requested.

**Response:** BLM is not aware of significant human-bear conflicts in the GSFO area with specific reference to oil and gas activities. However, we would welcome CDOW's providing educational information to the Williams project coordinator to minimize further the potential for such conflicts.

**Comment:** Attached is a list of site specific BMPs that we believe, when integrated into the Flatiron Mesa Master Development Plan will further minimize impacts to wildlife. Also attached is a list of General BMPs that may be helpful.

**Response:** Comment noted.

**LETTER FROM JUDY JORDAN , GARFIELD COUNTY OIL AND GAS LIAISON (NOVEMBER 9, 2009)**

**Comment 1:** *Williams Production RMT Company has indicated a plan with Laramie Energy II to share the costs of the monitoring system that Laramie has installed for their operations in the (Beaver Creek) watershed area. Garfield County encourages similar protective measures as suggested or required by the City of Rifle and supports the City's recommendations.*

**Response:** Comment noted.

**Comment 2:** *Since the monitoring of these (frac fluid) pipes is still an evolving science, the potential for a break is difficult to predict. If a frac pipeline break should occur, the consequences are more serious than they are with a water line, because the frac fluids contain chemicals of concern. Furthermore, the high pressures allow for the release of higher volumes of fluid prior to discovery and abatement. Therefore, Garfield County encourages the use of measures that could provide early detection of any centralized frac operation malfunction.*

**Response:** A Condition of Approval has been included in Appendix B that requires the operator and its contractors to (a) develop and implement a procedure that would identify any loss of pressure on their surface frac lines, and (b) develop and implement a spill containment protocol should such an event occur.

**Comment 3:** *The majority of the complaints we have received in the vicinity of the FMMDP concern odors and air quality health concerns. If the Bureau of Land Management encouraged VOC emission controls, we think that resident concerns regarding air quality may be reduced.*

**Response:** A Condition of Approval that requires the installation of VOC combustors or equivalent VOC emission controls on the pads supporting the proposed wells within the Flatiron Mesa MD has been included in Appendix B.

**Comment 4:** *Garfield County requests a meeting with all parties involved prior to any activities associated with this FMMDP to discuss the conditions that apply to the roads used to access this area. Williams Production RMT Company will be asked to participate in a road improvement program.*

*All vehicles hauling materials and equipment for this FMMDP shall abide by Garfield County's oversize/overweight permit system. All vehicles requiring oversize/overweight permits shall apply for them at Garfield County Road and Bridge Department. All vehicles applying for oversize/overweight permits shall have a letter or e-mail from Williams Production RMT Company stating said vehicles can obtain permits under their road bond on file with Garfield County.*

*Any pipelines within a Garfield County right of way shall require a pipeline or utility permit issued by the Garfield County Road and Bridge Department. Any new driveway access from a County road shall require a driveway access permit issued by the Garfield County Road and Bridge Department. These permits shall have conditions specific to the location of the pipeline, utility or driveway access.*

**Response:** A Condition of Approval in Appendix B identifies a meeting to be attended by Garfield County, BLM, and Williams representatives prior to any construction activities in the Flatiron Mesa Master Development Plan area.

**Comment 5:** *The proposed plan indicates that drill cuttings and muds will be buried on location, as well as an offsite cuttings disposal area if the well pad is not sufficient to support a large enough cuttings*

trench. Staff has noted that our analyses of such materials indicate high levels of hydrocarbons, barium, and other contaminants. Therefore, we would recommend that BLM prohibit the disposal of contaminated materials outside of approved disposal facilities, such as permitted landfills.

**Response:** COGCC rules require that cuttings with levels exceeding those identified in Table 910 be remediated prior to pit closure. This table can be found at [http://cogcc.state.co.us/RR\\_docs\\_new/rules/900Series.pdf](http://cogcc.state.co.us/RR_docs_new/rules/900Series.pdf)

**Comment 6:** *The Flatiron Mesa Master Development does not address any protections that the operator will undertake in order to avoid adverse impacts, nor does the proposal offer creation of habitat improvement upon interim or final reclamation. The proposed plan indicates that the operator will need an exception to the lease timing limitation that protects big game winter habitat.” However, the proposal offers no mitigation efforts or collaboration with the Colorado Division of Wildlife to lessen any adverse impacts on the big game winter habitat.*

**Response:** The Environmental Assessment identifies wildlife values, mitigation and lease stipulations that require protection of big game winter habitats. Appendix B contains specific COAs outlined to protect wildlife.

**Comment 7:** *Garfield County requests a weed inventory to be completed prior to any further construction if possible. The County is concerned with the Spotted Knapweed (Centaurea Maculosa), which is a listed noxious weed in Garfield County and Colorado State.*

*If any Spotted Knapweed is detected, a management plan should be implemented.*

**Response:** A weed inventory was conducted by WestWater Engineering in 2008 within the FMMDP. Spotted knapweed was found on top of Flatiron Mesa along the existing two-track powerline road. Appendix B contains a site-specific COA that requires flagging of the infestations, pre- and post-treatments, topsoil segregation, and vehicle washing.

**Comment 8:** *Garfield County favors the piping and recycling of water, and recommends that pipelines be placed in common corridors where feasible.*

**Response:** As identified in the EA, water would be piped or, at a minimum, recycled and would be placed in common pipeline corridors where feasible.

**LETTER FROM JAKE B. MALL, GARFIELD COUNTY ROAD AND BRIDGE DEPARTMENT – ADMINISTRATIVE FOREMAN (OCTOBER 19, 2009)**

**Comment:** *Garfield County would request a meeting with all parties involved prior to any activities associated with this FMMDP to discuss the following conditions that apply to the roads used to access this area.*

**Response:** A Condition of Approval in Appendix B identifies a meeting to be attended by Garfield County, BLM, and Williams representatives prior to any construction activities in the Flatiron Mesa Master Development Plan area.

**LETTER FROM GEORGE BAUER, ADJACENT LANDOWNER, SILT, CO (NOVEMBER 11, 2009)**

**Comment 1:** *Williams needs to aware of my access needs and my ability to access the property (T7S R93W, Section 8, NW¼SW¼) safely and without delay, not to have vehicles stopped, parked, turning around or otherwise negatively impacting my access route, gate or fences.*

**Response:** BLM and Williams are aware of the access route to the Bauer property. A Condition of Approval for the RU 42-7 pad has been developed to specifically address this concern (Appendix B).

**Comment 2:** *As a licensed surveyor in the State of Colorado and being very familiar with the well permit process, it appears to me that there is a more optimum location (northwesterly approx. 800') to situate the proposed pad. This move appears to get the pad closer to the bottomhole locations and with the topography being almost identical it would be no more cost to construct. This move also would shorten the new proposed access road thereby reducing the impact on the ground and the downwind impact that the wells and production equipment will have on adjacent properties.*

**Response:** Comment noted. BLM is checking with the surface owner of private land where the RU 42-7 pad is proposed.

**Comment 3:** *In addition to the suggestion to move the RU 42-7 northwesterly, it appears that the SR 43-12 is to be constructed westerly of the existing well pad. Why is that? There is already a 2 or 3 acre disturbance for the existing pad, what wrong with expanding the existing pad to accommodate the additional wells? To move the existing equipment and reconstruct is a no-brainer in the shrinking areas of winter habitat for deer and elk.*

**Response:** During the onsite review for the SR 43-12 pad, Williams explained that the new well pad was necessary to reach the planned bottomholes since the existing RU 13-7 pad also has a suite of Fee wells planned from that well pad. Williams's plan is to have wells on the SR 43-12 with westerly bottomhole reaches while, at some point in future, the RU 13-7 pad would serve a suite of new Fee wells with easterly bottomhole reaches.

**Comment 4:** *The new location for the RU 23-5 is in one of the best hunting and fawning/calving areas in the whole county. Is this the best use of the ground? With the pads all around the flanks of the Flatiron and now more pads on top, when will it end?*

**Response:** The RU 23-5 pad was originally proposed as two pads on the eastern flanks of Flatiron Mesa. At BLM's request, Williams agreed to access the bottomholes for these two pads from a single well pad (RU 32-5) on top of the mesa. The RU 23-5 location on top of the mesa has 44 planned wells which protects the visual landscape and habitat for sensitive plants on the eastern side of Flatiron Mesa from additional impacts associated with the construction of two pads and associated roads and pipelines. During the resource survey work for the RU 23-5 pad, including a review of mapping available from CDOW, no specific fawning or calving areas were identified. In general, specific areas, when they are present, are a greater concern and more easily dealt with than dispersed birthing, which is the case in most of the area of the GSFO, including the FMMDP area.

**Comment 5:** *With multiple wells on all of the pads, will they be drilled at once or is the plan to drill a few and come back? I would hope for them to be drilled at once, bring the rig in and don't leave till it's drilled out, no back and forth with the pad left unreclaimed for years on end.*

**Response:** As described in the FMMDP, Williams plans to initially drill exploratory wells using a conventional drill rig and follow-up in later years with development wells using efficiency rigs (Table 2).

**Comment 6:** *Is the plan to have offsite production units or will they be placed on the pads? They need to be on the pads with no more additional area to be sacrificed to construction.*

**Response:** In general, the production equipment is slated to be installed on the well pads. Final location of the equipment would generally be determined after the well pad has been constructed (Appendix B).

**LETTER FROM TRACY BRAIN, HOTEL DIRECTOR, PARACHUTE, CO (OCTOBER 19, 2009)**

**Comment:** *On behalf of the hotels, I am asking that you allow Williams Production the opportunity to go ahead with their plans to drill the 93 wells on the land owned by the BLM and the private land as well...I cannot speak for the other hotels, but, as you can see, the Oil and Natural Gas exploration in this area has been a major source of business and income for our 2 properties...I believe that in allowing Williams Production the opportunity to drill in the area, it will be a starting point in bringing the Natural Gas and Oil Exploration back in the Parachute, CO region.*

**Response:** Comments noted.

**EMAIL FROM RANDY FRICKE, NEW CASTLE, CO (NOVEMBER 11, 2009)**

**Comment 1:** *If Williams Production is going to drill 93 wells from one well pad, how is this plan to be carried out? How long will this project take?*

**Response:** Williams is proposing a 5-year development plan that involves the constructing, drilling, completing, and operating up to 93 Federal wells from four well pads. The pads include one new Federal well pad (RU 23-5 with 44 wells), one existing Federal well pad (RU 34-6 with 19 wells), and two new Fee well pads (RU 42-7 with 15 wells and SR 43-12 with 15 wells) located on private surface owned by Dr. Youberg. Ancillary facilities related to the project that would be constructed or upgraded include access roads, gathering pipelines (operated by Energy Transfer Corporation [ETC], an independent gas-gathering company), a variety of surface production equipment locations, and a centralized frac pad (RU 11-7).

**Comment 2:** *How much water will be required for this project? What are their water sources? How will Williams get water to this site?*

**Response:** 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. 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.

On average, a well would require 4,000 barrels (168,000 gallons) of water for each fracture stimulation stage, and there may be as many as seven stages per well. This water is supplied by Williams's water recycling facilities located in the Grand Valley and Rulison Fields. The frac water is recycled and reused for subsequent wells.

With the use of the remote frac pad (RU 11-7) that would accommodate the water and equipment required to frac wells within the development area, temporary surface water lines would be laid to deliver and return frac and flowback water to and from each of the four well pads in the MDP. Use of this remote, centralized frac pad would minimize the space needed on each well pad for completions equipment, as well as eliminate frac water hauling beyond the centralized pad.

**Comment 3:** *How will Williams Production dispose of drilling fluids?*

**Response:** No oil or 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 generated during the well drilling process would be contained in onsite test tanks, and removed at intervals by truck.

For the exploration drilling phase, one reserve pit for drilling mud 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 (MSDS) would be available at each well pad location. The reserve pit 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 closed as soon as practicable, but consistent with current regulations.

A reserve pit is not required for efficiency rigs because they operate using a closed system that recycles the fluids used in the drilling process. However, there is a need to dispose of drill cuttings. Therefore, instead of a reserve pit, a cuttings trench would be constructed. 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 of in trenches specifically sized for their volume (approximately 500 cubic yards per well), with all stormwater controls specified by State and Federal regulations.

Once reserve and cuttings pit contents meet Colorado State water quality standards, pits would be closed, the above-ground portion of the pit liner removed and transported to a landfill in Mesa County, and pit contents would be covered with layers of subsoil and topsoil.

**Comment 4:** *When will the environmental assessment be completed? Will the public have an opportunity to comment on the environmental assessment? Can the public assume that this project will not get approval until there has been a comment period on the EA?*

**Response:** The public's opportunity to comment on the project was provided during a 30-day public scoping period, which ran from October 13-November 13, 2009. The EA will be completed after the 30-day public scoping period has ended and the scoping comments have been incorporated into the EA, when appropriate. Under GSFO procedures, no additional opportunity for public comment is provided once the final EA has been completed and a decision issued. However, Applications for Permits to Drill (APDs) are posted for 30 days following receipt from the operator, and the public can comment on the APDs prior to their approval and issuance.

**EMAIL FROM RANDY FRICKE, NEW CASTLE , CO (NOVEMBER 13, 2009)**

**Comment 5:** *I would like to record this e-mail message as a protest to this gas drilling development by Williams Production Company. Since the environmental assessment is not available to the public, all*

*permits and approvals for this project should be halted until the public has a chance to view and comment on the EA report. Also, any development of this type will be cause considerable stress on vegetation and wildlife in this proposed development. Such a development will cause erosion and degradation to surrounding water sources. I feel that public hearings should be held on this these types of developments. The public does not get the full opportunity to see and observe what is happening in their areas. This type of project needs a full public hearing.*

**Response:** As someone who has submitted written comments on this project during the public scoping period for the EA, a letter will be forwarded to you after a decision is rendered on the EA. The letter will provide you instructions on how to request a State Director review of the decision if so wish to file such a request.

As described in BLM's NEPA Handbook (Chapter 8; Sections 8.2 - Public Involvement and 8.3.3 - Scoping and Issues) there is no regulatory requirement by the Council on Environmental Quality (CEQ) that requires agencies to make EAs available for public comment and review. However, BLM guidance does urge public involvement in the EA process. This office has chosen to seek public comment for ongoing projects, in particular Oil and Gas Master Development Plans (MDP), through a 30-day public scoping process of the Proposed Action. Typically, these comments provide valuable public feedback on the proposal allowing BLM staff to identify issues and concerns to be considered in the EA impact analysis and providing the BLM manager with important points to consider in rendering a decision. For the Flatiron Mesa MDP, the public opportunity to comment on the project was provided during the 30-day public scoping period, which ran from October 13-November 13, 2009.

**EMAIL FROM MICHAEL GORMAN, GLENWOOD SPRINGS , CO (OCTOBER 27, 2009)**

**Comment:** *As a resident in the area and after witnessing the huge boom in oil and gas development in the area, I am strongly opposed to allowing more drilling and most importantly 'fracing' in the area until we know more about what chemicals are used in the fracing process. There have been dozens of residents already impacted in terrible ways here. We are very worried about what kind of toxins are going into our drinking water here. Some residents have already lost the ability to use their water because of contamination.*

*It is very scary that these energy companies are allowed to put possibly carcinogenic chemicals into the ground here and they don't even have to comply with federal laws in place to protect our health and safety. Many residents have left the area they loved because the industry is destroying our towns' rural character, creating a huge burden on our roads and residents, destroying wildlife habitat and corridors, polluting our air and water, which our health and well-being depend on. By letting them continue to do this means you are turning your back on us, the public, and leaving us for dead as you continue to rake in revenue.*

*Please require the oil and gas industry to disclose the chemicals that they use for fracing. They say these chemicals don't affect our water, but still refuse to tell us what they are. If we knew what they were, we would be able to determine if they were toxic and if they were contaminating our water. You might also get a little more support from the public if they didn't think you were secretly trying to poison them.*

**Response:** The Energy Policy Act of 2005 amended the Safe Drinking Water Act of 1974 to exempt “the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities” from requirements to provide a list of injected compounds. The Clean Water Act of 1977 also exempts frac fluids from its list of

pollutants if hydraulic fracturing of a well has been “approved by authority of the State in which the well is located, and if the State determines that the injection ... will not result in the degradation of ground or surface water resources.” It is beyond the purview of the BLM to regulate use of these fluids, or to require operators to disclose their constituents or the proportions of these compounds.

There is no comprehensive, up-to-date list of typical chemicals currently used in the well completion (fracing) process in western Colorado. Compounds that are listed are often proprietary, and concentrations of their chemical components are not provided.

As stated in the EA, hydrofracturing would be conducted at 5,000 feet or more below ground surface, and would be unlikely to cause impacts to groundwater resources near the surface, such as springs or shallow alluvium. Casing and cementing programs are designed to protect and isolate all usable water zones and potential fresh water zones. It is highly unlikely that any shallow or 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, as well as preventing shallow groundwater sources from migrating into deeper formation water zones.

Other measures would be taken on drilling pads to prevent spills or leakage that could impact shallow groundwater aquifers. These would include lined containment berms and drain pans around produced water tanks and methanol tanks, respectively.

Along with the introduced chemicals, frac fluid is in close contact with rock during the course of the stimulation treatment, and when recovered may contain a variety of formation materials including brines, heavy metals, radionuclides, and organics. In some cases, the concentrations of these constituents have been found to significantly exceed drinking water standards. The potential problems for wastewater treatment facilities caused by such formation materials, as well as proprietary chemical additives in the frac fluid, are unclear; however, addressing this issue is also beyond the purview of the Glenwood Springs Field Office.

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## **APPENDIX B**

### **Surface-Use and Downhole Conditions of Approval**

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## STANDARD SURFACE-USE CONDITIONS OF APPROVAL

### APPLICABLE TO ALL ACTIVITIES WITHIN THE FLATIRON MESA MASTER DEVELOPMENT PLAN

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 MDP. 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.
2. Road Construction Use and Maintenance. Proposed roads would be constructed within an average disturbance corridor 35 feet wide, reduced to 25 feet of finished road surface (including bar ditches) after interim reclamation (see Table 1). Earth-moving equipment would be used to segregate and windrow the topsoil along the edge of the proposed road corridor. Roads shall be crowned, ditched, surfaced, drained with culverts and/or water dips, and constructed to Gold Book standards (*Surface Operating Standards for Oil and Gas Exploration & Development* -USDI and USDA 2007). Gravel shall be placed on new or upgraded roads to a minimum compacted depth of 6 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 six inches, blading and/or gravelling shall be conducted as approved by the BLM.

Sedimentation and stream channel impacts associated with roads would be reduced through the implementation of best management practices (BMPs) 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.

During snow removal, snow berms shall not be left on road surfaces; snow shall be deposited past the edge of the road shoulder, but not outside the road clearing limits.

On ungraveled roads, vehicle travel shall be avoided during excessively wet or muddy conditions.

The disturbance limits of all proposed roads, pipelines, and well pads would be staked and/or flagged prior to any commencement of operations. Straw wattles would be staked along the outer edge of the proposed disturbance limits of new roads, pipelines, or pads. A range fence would be installed around the disturbance perimeter of each pad and a cattleguard would be installed at each pad entrance prior to construction startup to reduce conflicts with livestock grazing. All trees and brush within the disturbance corridors of proposed roads, pipelines, and pads would be hydro-axed or chipped prior to beginning excavation work.

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 BLM 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.
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. Construction that disturbs any flowing stream shall utilize either a piped stream diversion or 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 24 inches. 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 (USACE) recommends designing drainage crossings for the 100-year event. Contact the USACE Colorado/Gunnison Basin Regulatory Office at 970-243-1199.

5. Jurisdictional Waters of the U.S. The operator shall obtain appropriate permits from the U.S. Army Corps of Engineers (USACE) prior to discharging fill material into waters of the U.S. in accordance with Section 404 of the Clean Water Act. 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. Permanent impacts to waters of the U.S. may require mitigation. The operator is strongly recommended to obtain a formal jurisdictional determination by USACE prior to any construction that could impact Waters of the U.S., and verification as to whether the impacts require a permit under NWP 14 or other regulation. Contact the USACE Colorado/Gunnison Basin Regulatory Office at 970-243-1199. Print or e-mail copies of any approved Corps permits shall be forwarded to the BLM.
6. Wetlands and Riparian Zones. The operator shall restore temporarily disturbed wetlands or riparian areas. The operator shall consult with the BLM Glenwood Springs Field Office to determine appropriate mitigation, including verification of native plant species to be used in restoration.
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. Interim reclamation to reduce a well pad to the maximum size needed for production, including seeding of the interim reclaimed areas, shall be completed within 6 months following completion of the last well planned for the pad. Reclamation, including seeding, of temporarily disturbed areas along roads and pipelines shall be completed within 30 days following completion of construction.

The deadlines for seeding described above are subject to extension upon approval of the BLM based on season, timing limitations, or other constraints on a case-by-case basis. If the BLM approves an extension for seeding, the operator may be required to stabilize the reclaimed surfaces using hydromulch, erosion matting, or other method until seeding is implemented.
  - 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 BLM 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).

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% by weight of other weed seeds. Seed may contain up to 2.0% 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 submitted to BLM 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 shall 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 BLM. Biodegradable 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% of the new plants are producing seed. The BLM must approve the type of fencing.
- i. Monitoring. The operator shall conduct annual monitoring surveys of all sites categorized as “operator reclamation in progress” and shall submit an annual monitoring report of these sites to the BLM 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 BLM.
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 Field 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 to BLM by **December 1**.
9. Agreements with Other Holders. Potential impacts to the existing BLM rights-of-way (ROWs) from the lease operations proposed by Williams or by the rights-of-way to be authorized to Energy Transfer in the FMMDP would be mitigated based on written maintenance and use agreements between Williams, Energy Transfer and the existing ROW holders. Such agreements shall be obtained and verified with the BLM prior to any disturbance or construction across or adjacent to an existing right-of-way.
10. Raptor Nesting. Raptor nest surveys in the project vicinity resulted in the location of one or more raptor nest structures within 0.25 mile of a well pad or 0.125 mile of an access road, pipeline, or other surface facility. To protect nesting raptors, a 60-day Timing Limitation (TL) shall be applied to construction, drilling, or completion activities within the buffer widths specified above, if the activities would be initiated during the nesting period of April 15 to June 15. An exception to this TL may be granted for any year in which a subsequent survey determines one of the following: (a) the nest is in a severely dilapidated condition or has been destroyed due to natural causes, (b) the nest is not occupied during the normal nesting period for that species, (c) the nest was occupied but subsequently failed due to natural causes, or (d) the nest was occupied but the nestlings have fledged and dispersed from the nest. In the case of a dilapidated nest or one that was destroyed due to natural causes, the TL shall apply to any alternate or replacement nest within the buffer widths specified above, unless an exception is granted for the alternate or replacement nest for one of the reasons listed.
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. 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 USFWS representative in the BLM Field Office at 970-947-5219 and visit <http://www.fws.gov/mountain-prairie/contaminants/oilpits.htm>.

12. Birds of Conservation Concern. Pursuant to BLM Instruction Memorandum 2008-050, all vegetation removal is prohibited from May 1 to July 1 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. This provision does not apply to ongoing construction, drilling, or completion activities that are initiated prior to May 15 and continue into the 60-day period at the same location.
13. Range Management. Range improvements (fences, gates, reservoirs, pipelines, etc) shall be avoided during development of oil and 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.

A perimeter fence capable of holding grazing livestock shall be installed around newly constructed well pads prior to pad construction to help provide a barrier to grazing livestock during the drilling/completion phase and mitigate potential surface impacts to surrounding special status plant species and /or habitat.

14. 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 of the findings. The discovery must be protected until notified to proceed by the BLM.

Where feasible, the operator shall suspend ground-disturbing activities at the discovery site and immediately notify the BLM of any finds. The BLM 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.

15. 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 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 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 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. Approval to proceed will be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the BLM, when practicable. When not practicable, the operator shall bear the cost of the services of a non-Federal professional.

Within five working days, the BLM 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 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 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 will provide technical and procedural guidelines for relocation and/or to conduct mitigation. Upon verification from the BLM 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).

16. Visual Resources. Above-ground facilities on the well pads and pipeline corridors including corrugated metal containment rings shall be painted Shadow Gray to blend with the existing landscape.

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 BLM due to other resource concerns—and shall be placed to maximize reshaping of cut-and-fill slopes and interim reclamation of the pad. Final locations of facilities including storage tanks and separator units shall be jointly determined by BLM and Williams representatives prior to completion of pad construction.

To the extent practicable, existing vegetation shall be preserved when clearing and grading for pads, roads, and pipelines. The BLM may direct that cleared trees and rocks be salvaged and redistributed over reshaped cut-and-fill slopes or along linear features. On pads, roads, or pipelines where boulder fields exist, reclamation would include the salvage and re-placement of boulders to aid in restoring a natural appearance.

17. Cuttings Trench or Reserve Pit Use. Regardless of whether drilling operations utilize a cuttings trench to contain drill cuttings or a reserve pit to contain drilling fluids and cuttings, the trench or pit shall be lined to prevent infiltration into surrounding soils. The pit liner shall remain in place and unperforated with the pit contents, and the pit contents shall meet the hazardous material thresholds of Table 910-1 identified in COGCC 2009 regulations, unless otherwise directed by the BLM. A minimum of 2 feet of freeboard shall be maintained in the cuttings trench or reserve pit. Freeboard is measured from the highest level of drilling fluids and cuttings in the reserve pit to the lowest surface elevation of ground at the reserve pit perimeter.

18. Soils. Topsoil shall be windrowed around the pad perimeter to create a berm that limits and redirects stormwater runoff and to extend the viability of the topsoil per BLM Topsoil Best Management Practices (BLM 2009 PowerPoint presentation available upon request from Glenwood Springs Field Office). Topsoil shall also be windrowed, segregated, and stored along pipelines and roads for later spreading across the disturbed corridor during final reclamation. Topsoil berms shall be promptly seeded to maintain soil microbe health, reduce erosion, and prevent weed establishment.

Cuts and fills shall be minimized when working on erosive soils and slopes in excess of 30%. 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%, BLM personnel may request a professional geotechnical analysis prior to construction.

19. Frac Surface Line Monitoring. The operator and its well completion subcontractors shall (a) develop and implement a procedure that would identify any loss of pressure on their surface frac lines and identify and control, and (b) develop and implement a spill containment protocol should such an event occur.
20. Garfield County Coordination Meeting. A coordination meeting shall be attended by Garfield County Road and Bridge Department, BLM and Williams representatives to discuss pertinent activities associated with the Flatiron Mesa Master Development Plan.
21. Remote Sensing Use. To reduce impacts to wintering big game, remote sensing should be used for production monitoring and, to the extent practicable, any monitoring or maintenance activities should

be conducted between 9 a.m. and 3 p.m. These additional recommendations apply to the period from December 1 to April 30.

22. City of Rifle Municipal Watershed Permitting. The operators, Williams and Energy Transfer, would apply for necessary permits and authorization from the City of Rifle to conduct the proposed work and develop appropriate measures to mitigate impacts to the domestic watershed area. Consultation would occur between the operators and City of Rifle to ensure that the Proposed Action and its best management practices would protect the water quality parameters of the watershed.
23. Interim Reclamation Related to Drilling Phases. Within 1 year of completion of all exploratory wells proposed on a pad or within one year of completion of all development wells on a pad (whichever the situation may be), Williams would stabilize the disturbed area by recontouring, mulching, providing run-off and erosion control, replacing topsoil as directed, and seeding with BLM-prescribed native seed mixes (or landowner requested seed mix on Fee surface), and conducting weed control, as necessary. In cases where the exploratory drilling and development drilling on a single pad occur more than 1 year apart, slopes shall be recontoured to the extent necessary to accommodate seeding, and seed mixes required by BLM or requested by the private landowner shall be applied to stabilize the soil between visits per direction of the BLM.
24. Hydrostatic Pipeline Testing. After testing of newly installed pipelines including surface frac lines,, water used in pressure testing of the lines shall be disposed at a State-approved facility or reused for drilling and/or completion operations.

## **SITE-SPECIFIC CONDITIONS OF APPROVAL**

### **11-7 Frac Pad**

Harrington's penstemon Mitigation - To minimize surface disturbance and impacts to this species, the proposed surface line will be installed by staging heavy equipment on existing disturbed areas in order to pull the surface line across undisturbed habitat with the use of a cable.

Surface Frac Line Location. To minimize ground disturbance impacts of the surface frac line north of the RU 11-7 pad, the surface line shall be placed along the RU 21-7 pad access road.

### **RU 23-5 Well Pad**

Big Game Winter Range Timing Limitation. In order to protect important seasonal wildlife habitat and minimize impacts to wintering big game, no construction, drilling or completion activities shall occur from **January 16 to April 29** annually. This limitation does not apply to maintenance and operations of producing wells. Exceptions to this limitation in any particular year may be specifically approved by the appropriate BLM Field Manager.

BLM Surface-Use Permitting. Although Williams has a communitization agreement for Section 7, T7S R93W, a BLM road right-of-way shall be applied for and obtained for the existing Flatiron Mesa Access Road across Section 7 and the new RU 23-5 road in Section 8 to cover Williams's use and maintenance of these road segments, which serve the RU 23-5 and RU 42-7 pads. Williams shall submit a Sundry Notice to BLM for the construction, use, and maintenance of the Flatiron Mesa Access Road, including the 300-foot new road segment on public land serving the RU 42-7 pad.

Harrington's Penstemon Seeding. To mitigate for plant losses, seed of Harrington's penstemon previously collected on location shall be hand broadcast and raked into the disturbed soil along the reclaimed pipeline corridor and reclaimed powerline two-track road by a contractor familiar with this species. A pre-construction onsite meeting with the BLM ecologist shall be held to discuss the details of this plan.

Spotted knapweed control. To prevent spotted knapweed from moving into previously uninfested areas, the following procedures shall be met:

- Prior to road and pipeline construction, all occurrences of spotted knapweed along the existing two-track road that parallels the power line shall be treated, if timing is appropriate.
- All occurrences of knapweed shall be flagged by the BLM ecologist prior to road and pipeline construction. Topsoil and subsurface soil from each occurrence shall be placed immediately adjacent to prevent spreading weed propagules and seeds along the disturbed corridor. The soil will then be returned to the original location during reclamation work.
- All construction and off-road equipment to be used during construction of the road and pipeline to RU 23-5 shall be power washed before leaving the area infested by knapweed. Equipment shall be inspected by BLM personnel and considered clean when seeds, soil, vegetative matter, and other debris that could contain seeds are absent.
- A pre-construction onsite meeting with the BLM ecologist shall be held to discuss the details of this plan.

Williams's Road Construction, Use and Maintenance along the PSCo Powerline Right-of-Way. The proposed road construction on the PSCo powerline route would allow for Williams's use and maintenance of the road in support of well drilling and production, and continue to provide PSCo personnel and equipment access to the powerline right-of-way. Williams shall be responsible for constructing and maintaining the road throughout the productive life of the proposed wells as shown on Figures 4-6 in the Environmental Assessment. When the wells reach the end of their projected life (estimated 20 to 30 years), the road shall be abandoned, and Williams shall reclaim the road bed to its present condition for use by PSCo as a two-track route unless BLM has determined the road is desirable for other resource uses.

ETC's Pipeline Construction and Use along PSCo Powerline Right-of-Way . The proposed ETC pipeline serving the RU 23-5 wells shall be alongside the proposed access road as shown on Figures 4-6 in the Environmental Assessment. After installation of the buried pipeline, the pipeline corridor shall be reclaimed per BLM requirements identified in the pipeline right-of-way and listed under Reclamation Standards in Appendix B of the Environmental Assessment.

ETC's pipeline construction shall be conducted in a manner that requires hydro-axe removal of brush species along the proposed pipeline alignments, particularly where topsoil is to be windrowed. This type of vegetation removal is intended to retain the root mass of the brush allowing for quick reestablishment of brush within the disturbance corridor.

#### **RU 42-7 Well Pad**

Maintain Existing Access Route to Private Land. The existing and proposed realigned jeep road serving private land in the S2NW4 and SW4 Section 8, T7S, R93W, shall remain unobstructed and open year-round to allow private landowners access to their property.

Cattleguard-Bypass Gate Installation. A new cattleguard with bypass gate shall be installed into the existing boundary fence between Youberg and BLM located along the proposed RU 42-7 access road.

### **COAs Specific to ETC's Gas-Gathering Pipeline**

Beaver Creek Crossing Details. At the trenched crossing of Beaver Creek, the width of the construction corridor shall be kept the minimum width possible to limit modification to the streambed. Indirect impacts due to runoff from the construction zone on the approach/departure sides of the stream shall also be limited by narrowing the construction corridor and not stockpiling soil or other excavated material in proximity to the stream. The operator shall notify the BLM prior to installation of this segment of pipeline so that the BLM may ensure that proper BMPs are being utilized to prevent sediment from entering the stream at this location.

BLM Surface-use Permitting. As an independent gas-gathering provider, ETC shall apply for and obtain BLM pipeline ROWs for the various Flatiron Mesa pipeline gathering system upgrades identified in the description of the Proposed Action.

The standard and site-specific conditions of approval identified in Appendix B shall be incorporated into the proposed BLM rights-of-way to be issued to Energy Transfer.

ETC's Pipeline Construction and Use along PSCo Powerline Right-of-Way . The proposed ETC pipeline serving the RU 23-5 wells shall be buried alongside the proposed access road as shown on Figures 4-6 in the Environmental Assessment. After installation of the buried pipeline, the pipeline corridor shall be reclaimed per BLM requirements identified in the pipeline right-of-way and listed under Reclamation Standards in Appendix B of the Environmental Assessment.

ETC's pipeline construction shall be conducted in a manner that requires hydro-axe removal of brush species along the proposed pipeline alignments, particularly where topsoil is to be windrowed. This type of vegetation removal is intended to retain the root mass of the brush allowing for quick reestablishment of brush within the disturbance corridor.

### **Road Right-of-Way COA**

Big Game Winter Range Timing Limitation. To minimize impacts to wintering big game, road construction and completion or use of roads for construction, drilling or completion activities shall not occur during a Timing Limitation (TL) period from **January 16 to April 29** annually.

## DOWNHOLE CONDITIONS OF APPROVAL

### **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 BLM 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).

### **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, spend 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**

**Terms and Conditions for ETC's Pipeline Right-of-Way**

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Harrington's Penstemon Seeding. To mitigate for plant losses, seed of Harrington's penstemon previously collected on location shall be hand broadcast and raked into the disturbed soil along the reclaimed pipeline corridor and the reclaimed powerline two-track road by a contractor familiar with this species. A pre-construction onsite meeting with the BLM ecologist shall be held to discuss the details of this plan.

Spotted Knapweed Control. To prevent spotted knapweed from moving into previously uninfested areas, the following procedures shall be met:

- Prior to road and pipeline construction, all occurrences of spotted knapweed along the existing two-track road that parallels the power line shall be treated, if timing is appropriate.
- All occurrences of knapweed shall be flagged by the BLM ecologist prior to road and pipeline construction. Topsoil and subsurface soil from each occurrence shall be placed immediately adjacent to prevent spreading weed propagules and seeds along the disturbed corridor. The soil shall then be returned to the original location during reclamation work.
- All construction and off-road equipment to be used during construction of the road and pipeline to RU 23-5 shall be power washed before leaving the area infested by knapweed. Equipment shall be inspected by BLM personnel and considered clean when seeds, soil, vegetative matter and other debris that could contain seeds are absent.
- A pre-construction onsite meeting with the BLM ecologist shall be held to discuss the details of this plan.

The proposed ETC pipeline serving the RU 23-5 pad shall be buried alongside the proposed Williams access road. After installation of the buried pipeline, the pipeline corridor shall be reclaimed per BLM requirements identified in the pipeline right-of-way. BLM's objective is to work with Williams as the leaseholder and with PSCo and ETC as right-of-way holders to develop and construct a road and pipeline that mitigates impacts to the existing electric transmission line, including the powerline structures, without interfering with PSC's ability to continue to access, operate, and maintain the overhead lines.

ETC's pipeline construction shall be conducted in a manner that requires hydro-axe removal of brush species along the proposed pipeline alignments, particularly where topsoil is to be windrowed. This type of vegetation removal is intended to retain the root mass of the brush allowing for quick reestablishment of brush within the disturbance corridor. No equipment or vehicle use shall be allowed outside the staked disturbance corridor of the pipeline rights-of-way.

After testing of newly installed pipelines, water used in pressure testing of the lines shall be disposed at a State-approved facility or reused for drilling and/or completion operations.

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.

The BLM shall be notified within 48 hours of the start of pipeline installation within the BLM 8184 road crossing Beaver Creek if this route is chosen for the crossing.

