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Bureau of Land Management  
Colorado State Office

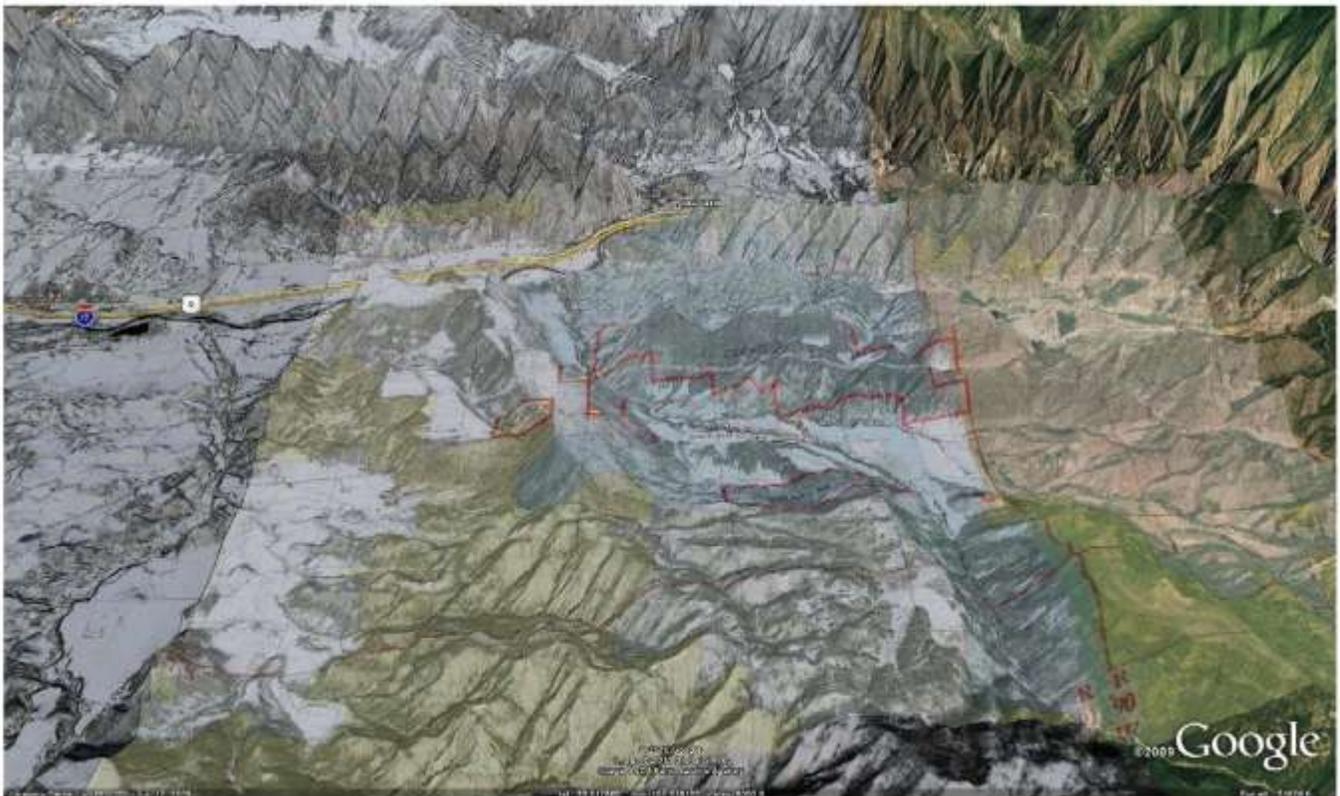
Colorado River Valley Field Office

September 2011



**Dejour Master Development Plan for  
Natural Gas Exploration and Development  
DOI-BLM-CO-N040-2010-0068-EA**

**Dejour Energy (USA) Corporation**



**Prepared by  
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## **FONSI**

### **DOI-BLM-CO-040-2010-0068-EA**

The attached Environmental Assessment (EA) analyzing the environmental effects of the Proposed Action has been reviewed. Project design and approved mitigation measures result in a Finding of No Significant Impact (FONSI) on the human environment for the portion associated with the proposed well pad 21A located on BLM land and accessing Federal lease COC66370. The BLM has determined that this portion of the Proposed Action does not require preparation of an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA).

The BLM is deferring an impact determination relative to portions associated with development on State-owned lands within the Garfield Creek State Wildlife Area (GCSWA), including well pads 21B and 22A for accessing Federal lease COC66370 and well pad 15A for accessing Federal lease COC65531. The deferral will remain in place until Dejour has executed a Surface Use Agreement (SUA) with Colorado Parks and Wildlife (CPW) and submitted a wildlife mitigation plan developed in cooperation with CPW and found sufficient by the BLM, and until all remaining legal issues involving oil and gas development on GCSWA lands overlying the two Federal oil and gas leases are resolved.

## **DECISION RECORD**

DECISION: It is my decision to approve the portion of the Proposed Action for the Dejour Master Development Plan (DMDP) described in the attached EA as it pertains to well pad 21A, located on BLM land, accessed across private land, not involving surface-disturbing activities on State-owned lands within the GCSWA, and for the purpose of developing fluid mineral resources within Federal oil and gas lease COC66370. It is also my decision to defer remaining portions of the DMDP relative to well pads 15A, 21B, and 22A, located on State-owned land within the GCSWA, consistent with the FONSI.

RATIONALE: The bases for this decision are as follows:

1. This decision will provide for the orderly, economical, and environmentally sound exploration and development of oil and gas resources on Federal oil and gas leases.
2. Approval of the Proposed Action validates the rights granted with the Federal oil and gas leases to develop the leasehold to provide commercial commodities of oil and gas.
3. Environmental impacts will be avoided or minimized through protective lease stipulations and by the best management practices and mitigation measures included in the Proposed Action or otherwise applied and enforced by BLM as Conditions of Approval (COAs).
4. This decision does not authorize the initiation of surface-disturbing activities on BLM lands or the development of new Federal oil and gas wells on new or existing well pads. Surface-disturbing activities on BLM lands and development of Federal wells will not commence until approval by BLM of Applications for Permits to Drill (APDs) or issuance by BLM of right-of-way grants in conjunction with the Dejour Master Development Plan.
5. This decision does not authorize any surface-disturbing activities on lands within the GCSWA.

MITIGATION MEASURES: The EA describes stipulations for the protection of surface resources, including various no-surface occupancy (NSO), controlled surface use (CSU), and timing limitation (TL)



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## **1. INTRODUCTION**

### **1.1 Background**

Dejour Energy (USA) Corporation (Dejour) is proposing a development program for natural gas on 880 acres of Federal, State, and private lands in Township 6 South (T6S), Range 91 West (R91W) in the Piceance Basin, approximately 3 miles south of New Castle, Garfield County, Colorado. This proposal, referred to as the Dejour Master Development Plan (DMDP), arises from the implementation of Fee mineral drilling that successfully demonstrated the potential of the Jolley Mesa area to contain economically viable reserves of natural gas.

The project area encompasses 880 acres, with 80 acres of Federal surface and mineral ownership managed by the Bureau of Land Management (“BLM lands”), 80 acres of private surface and private mineral ownership (“Fee lands”), 240 acres of split-estate lands comprising State-owned surface managed by the Colorado Division of Wildlife (now Colorado Parks and Wildlife, CPW) in the Garfield Creek State Wildlife Area (GCSWA) and underlain by private minerals, and 480 acres of split-estate lands comprised of GCSWA surface underlain by Federal mineral ownership. The latter two categories, totaling 720 acres, are collectively referred to as “GCSWA lands” for the purposes of the DMDP project.

This proposal consists of constructing, drilling, completing, and operating up to 68 Federal wells four surface locations. An initial development phased, as described in the current Proposed Action, includes the following: Pad 15A – two wells; Pad 21A – four wells; and Pad 21B – eight wells. Applications for Permits to Drill (APDs) for these initial 14 wells have been submitted to the BLM Colorado River Valley Field Office (CRVFO) for review. Additional APDs for a fourth surface location, Pad 22A, are anticipated shortly. Figure 1 shows the location of the four proposed well pads. Note that Pad 21A is on BLM surface, while the remainder are on State surface within the GCSWA.

Ancillary facilities connected to the project include access roads, natural gas and produced water lines, and a variety of surface production equipment. Included in the proposal are mitigation measures designed to minimize or eliminate impacts to surface and subsurface resources.

### **1.2 Purpose and Need**

The purpose of this proposal is to develop natural gas resources on Federal leases COC66370 (Section 21/22 pads and wells) and COC65531 (Section 15 pad and wells) consistent with existing Federal lease rights. The action is needed to increase the development of natural gas resources for commercial marketing to the public. Instead of structuring the development of these leases as a series of individual actions, the current Glenwood Springs Resource Area (GSRA) land use plan (BLM 1999b), in addition to subsequent BLM policy, specifies the use of multi-well development plan proposals to more effectively manage Federal lease development.

### **1.3 Public Scoping**

On July 9, 2010, the BLM sent a letter to neighbors and other interested publics announcing the upcoming publication of an earlier version of Dejour’s project proposal for public review and comment. However, prior to publishing that project proposal, the BLM determined that it was premature because of issues involving access across private lands for which a surface use agreement was not yet in place and because of issues involving certain restrictive stipulations that had been erroneously omitted from the lease documents by the BLM. Consequently, the earlier project proposal was not published, and on July 12, 2010, the BLM sent a letter to the same parties. A little more than 1 year later, on July 27, 2010, the BLM concluded that the project planning was sufficiently mature to warrant publishing the Proposed

Action for a 30-day public review and comment period. The triggers for publishing the Proposed Action were (1) a surface use agreement (SUA) between Dejour and the Jolley family for access across private land to access well pads in Sections 21 and 22, in an area known locally as Jolley Mesa; (2) submittal to CPW by Dejour of a draft SUA for construction and oil and gas development activities on State-owned land within the GCSWA; and (3) conceptual agreement between Dejour and CPW regarding an appropriate wildlife mitigation plan, which is a requisite for the BLM to authorize construction of facilities within the GCSWA for the purpose of accessing Federal oil and gas leases.

Appendix B presents the comments resulting from the 30-day public review and comment period and BLM's responses to those comments.

#### **1.4 Land Use Conformance Review**

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

Name of Plan: Glenwood Springs Resource Management Plan (BLM 1984, revised 1988). Amended in 1991 – Oil and Gas Plan Amendment to the Glenwood Springs Resource Management Plan (BLM 1991). Amended in 1999 – Oil & Gas Leasing & Development, Record of Decision and Resource Management Plan Amendment (BLM 1999b).

Decision Number/Page/Language: Record of Decision, Glenwood Springs Resource Management Plan Amendment, November 1991, 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.” This decision was carried forward on page 3 of the Record of Decision for the 1999 RMP amendment (BLM 1999b), although stated as the converse (“...27,600 acres of BLM-administered mineral estate in the [Field Office area] are closed to oil and gas leasing”).

Record of Decision, Glenwood Springs Resource Management Plan Amendment, March 1999, page 15: “In areas being actively developed, the operator must submit a Geographic Area Proposal [currently referred to as a Master Development Plan, MDP] that describes a minimum of 2 to 3 years activity for operator controlled leases within a reasonable geographic area.”

Discussion: The proposed development includes surface-disturbing activities on GCSWA lands overlying Federal leases COC65531 and COC66370. The current land use plan (BLM 1999b) specifies certain protective stipulations as applicable to these lands, including the no surface occupancy (NSO), controlled surface use (CSU), and Timing Limitation (TL) stipulations identified in Table 2. Among these, no stipulation GS-NSO-04, specified in the current land use plan (LUP)(BLM 1999b) for inclusion on all lands within the GCSWA overlying Federal mineral estate, would prohibit surface-disturbing activities on State-owned surface in conjunction with developing Federal oil and gas leases. However, the current LUP provides for the granting by BLM of an exception to that stipulation if specified exception criteria are met, specifically the development of a wildlife mitigation plan by Dejour in consultation with CPW.

For the purposes of analysis of publishing the Proposed Action for public review and completing the impact analysis in this EA, the BLM has assumed that the exception criteria for GS-NSO-04 will have been met before approval of the portion of the EA relating to GCSWA lands and approval of any APDs for wells to be drilled from pads on GCSWA lands. Other NSO stipulations were identified in the LUP for inclusion in Federal oil and gas leases affecting the project area (Table 2), but none of these applies to areas subject to surface-disturbing activities during implementation of the Proposed Action and therefore do not affect its conformance with the current LUP.

Although assumptions regarding requirements for an SUA and wildlife mitigation plan provided a basis for publishing and analyzing the Proposed Action, the BLM will defer approval of portions of the project resulting in surface disturbance within the GCSWA until the assumptions are validated by State approval of an SUA and a wildlife mitigation plan. This deferral applies to the 15A, 21B, and 22A pads and associated facilities but does not apply to the 21A Pad, which would be located on BLM land and accessed across private land. By deferring approval of facilities within the GCSWA, the BLM is also deferring approval of APDs for wells accessing Federal minerals from the GCSWA pads. Based on information provided by CPW, final approval by the Colorado Wildlife Commission of the SUA and mitigation plan developed by Dejour in consultation with CPW is expected in late fall 2011.

As part of the process of determining whether and when to approve portions of the DMDP affecting GCSWA lands, the BLM will independently evaluate the adequacy of the mitigation plan relative to the exception criteria for stipulation GS-NSO-04. The BLM has sole authority for the granting of exceptions to lease stipulations. Exceptions are granted on a case-by-case basis in relation to specific projects, locations, and timeframes and do not apply to an entire lease or to future projects involving that lease. In determining whether to grant an exception to GS-NSO-04, the BLM will independently evaluate the mitigation plan in relation to Federal resources as well as the sensitive resource values for which the State acquired the lands and established the GCSWA. As an outcome of its independent evaluation, the BLM may require additional mitigation beyond that agreed to between Dejour and CPW.

In addition to the deferral described above, the BLM will not approve components of the Proposed Action involving Federal lease COC65531 (the 15A Pad and associated facilities) until all remaining legal issues associated with that lease have been resolved.

## **1.5 Standards for Public 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. This EA addresses whether the Proposed Action would tend to maintain, improve, or deteriorate land health conditions relative to these resources. However, this analysis pertains only to the single well pad to be located on BLM land.

## **2. PROPOSED ACTION AND NO ACTION ALTERNATIVE**

The Proposed Action describes future development of the DMDP area by Dejour based on current market conditions and company constraints. Associated with potential development of up to 68 Federal oil and gas wells from the four well pads shown on Figure 1, the project would include up to 1 mile of new access roads and 1.25 miles of natural gas gathering pipelines (Figure 1). Most of the total length of access roads and pipelines would be in existing corridors outside the DMDP area. The total number of wells drilled and the number of wells drilled per year would depend largely on factors such as availability of drill rigs, geologic success, engineering technology, economic factors (e.g., the price of natural gas and the cost of services), availability of commodity markets, and limitations associated lease stipulations or COAs applied by the BLM.

### **2.1 Proposed Action**

#### ***2.1.1 Development Phase***

During the course of development, a variety of construction activities would be needed. All of these activities could occur simultaneously. The following subsections describe the construction methods.

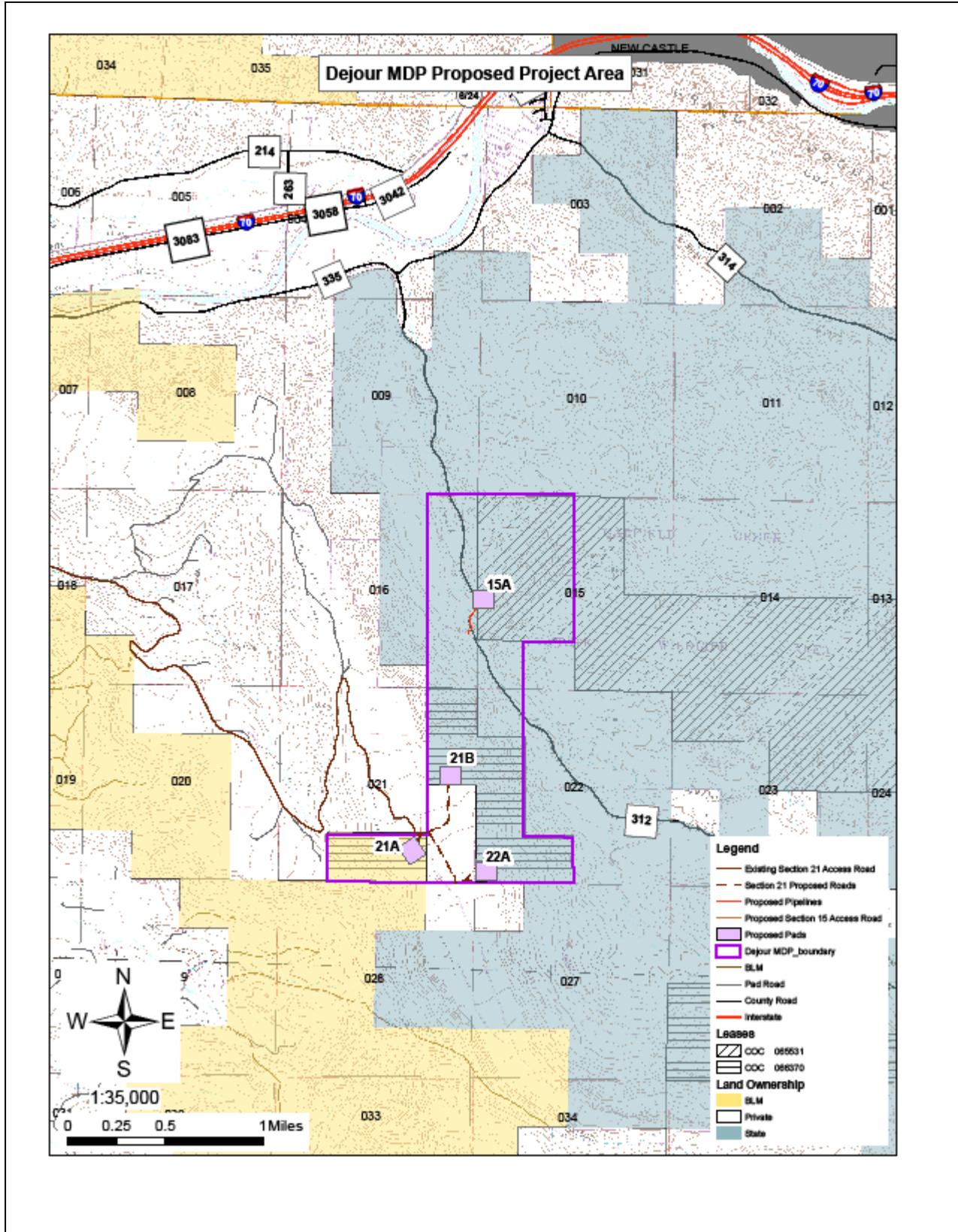


Figure 1. Dejour MDP Project Area and Proposed Pads, Roads, and Pipelines

### Construction of Proposed Well Pads

Proposed locations of the well pads reflect the results of a preliminary field visit by representatives of the BLM, CPW, Dejour, and Dejour subcontractors on April 22, 2010, and a final field visit on August 31,

2011. The primary purpose of the field visits was to assess potential resource impacts associated with various construction activities. This included assessment of the proposed pad layout, cuts and fills, topsoil stockpiling, erosion control, access, pipeline routes, and reclamation potential of each activity. In some cases, multiple revisions to the proposed well location, pipeline, and access routes were made to minimize potential impacts and accommodate the private landowners' requests. Surface-use agreements are being negotiated between Dejour and the surface owners, including CPW on behalf of the State and private landowners.

The proposed well pads would be located on flat areas near existing roadways to minimize surface disturbance. The roadways would be upgraded, and new access roads would be designed to meet BLM standards. The proposed pads would be constructed from native soil and rock materials present using a bulldozer, grader, and excavator. The pads would be constructed by clearing vegetation, stripping and stockpiling topsoil, and leveling the pad area using cut-and-fill techniques. Juniper trees removed during construction would be placed at the toe of the fill slopes to "catch" the fill and act as a filtration system for stormwater management. Pinyon trees would be chipped, or logged and removed from the site. Other woody vegetation would be mulched and used in reclamation, placed at the toe of the fill slopes, or applied to the fill slopes to impede runoff and blend with nearby native slopes. Cut slopes associated with pad construction would be left rough to provide a seed catchment surface and may require "step cutting" when heights exceed 15 feet. Cut slopes for pad construction are not expected to be steeper than 1.5: 1 (horizontal: vertical) except when approved by the BLM. The tops of the cut banks and pad corners may be rounded to improve their appearance and reduce the volume of cut and fill material.

Initially, the size of the newly constructed pads would range from about 1.6 to 4.4 acres. After all wells on a pad are drilled, completed, and put into production, interim reclamation activities would begin as required by the BLM and Colorado Oil and Gas Conservation Commission (COGCC) rules and regulations. Cuts and fills would be recontoured and revegetated to blend with adjacent native slopes as much as possible and seeded to reestablish vegetation cover. Interim reclamation techniques would result in approximately a 50% reduction in the area of surface disturbance over the long-term life of the project (i.e., 20 to 30 years) until final reclamation of each pad and access spur road. Table 1 presents the sizes of the pads during drilling and completion activities (short-term disturbance) and after interim reclamation (long-term disturbance).

After being allowed to dry, cuttings would be buried in a trench on each pad. The BLM would require that Dejour use a closed-loop drilling system to avoid open pits containing produced water, condensate, and drilling contaminants on the pads. In the closed-loop process, drill cuttings would be centrifuged to remove fluids and placed in a lined cuttings trench at each pad. The cuttings would then be mixed with other materials and the pits closed at the end of the drilling season. The cuttings trenches would be bermed to keep runoff from entering the trenches, and fenced. In the future the cuttings may be transported to a permitted disposal facility.

After 1 year from spudding the initial well on a pad, or 1 year after spudding any successive well(s) on that pad, Dejour would implement and complete temporary (pre-interim) and, subsequently, standard interim reclamation practices as identified in the BLM's surface-use COAs (Appendix A). Dejour would also implement best management practices (BMPs) required by the BLM on "open" (as-yet unreclaimed) pads to control stormwater drainage and weeds and provide for wildlife protection, dust abatement, and visual resource management.

<b>Table 1. Proposed Well Pads, Access Roads, and Pipelines</b>						
<b>Proposed Well Pads</b>						
<b>Pads</b>	<b>Lease</b>	<b>Legal Description T6S, R 91W</b>	<b>Surface</b>	<b>Short-term Acres</b>	<b>Long-term Acres</b>	
Pad 15A	COC66370	NWNW Sec 15	State	1.70	1.60	
Pad 21A	COC66370	SWSE Sec 21	BLM	4.42	2.62	
Pad 21B	COC66370	SENE Sec 21	State	3.96	1.96	
Pad 22A	COC65531	SWSW Sec 22	State	2.52	1.70	
<b>Subtotal</b>			<b>State</b>	<b>8.09</b>	<b>5.26</b>	
<b>Subtotal</b>			<b>BLM</b>	<b>4.42</b>	<b>2.62</b>	
<b>TOTAL</b>				<b>12.60</b>	<b>7.88</b>	
<b>Proposed Access Roads</b>						
<b>Access Road</b>	<b>Length</b>			<b>Surface</b>	<b>Short-term Acres</b>	<b>Long-term Acres</b>
	<b>miles</b>	<b>feet</b>				
Pad 15A Access Road	0.06	320		State	0.18	0.18
Pad 21A Access Road	0.17	920		BLM	0.86	0.52
Pad 21A Access Road	0.09	500		Private	0.55	0.33
Pad 21B Access Road	0.02	100		State	0.11	0.07
Pad 21B Access Road	0.33	1,750		Private	2.01	1.21
Pad 22A Access Road	0.45	2,400		Private	2.75	1.65
<b>Subtotal State</b>	<b>0.08</b>	<b>420</b>		<b>State</b>	<b>0.29</b>	<b>0.25</b>
<b>Subtotal BLM</b>	<b>0.17</b>	<b>920</b>		<b>BLM</b>	<b>0.86</b>	<b>0.52</b>
<b>Subtotal Private</b>	<b>0.87</b>	<b>4,650</b>		<b>Private</b>	<b>5.31</b>	<b>3.19</b>
<b>TOTAL</b>	<b>1.12</b>	<b>5,990</b>			<b>6.46</b>	<b>3.96</b>
<b>Proposed Pipelines</b>						
<b>Pipelines</b>	<b>Length</b>			<b>Surface</b>	<b>Short-term Acres</b>	<b>Long-term Acres</b>
	<b>miles</b>	<b>feet</b>				
Pad 15A	0.22	1,150		State	1.32	0.79
Pad 21A	0.14	750		BLM	0.86	0.52
Pad 21A	0.05	250		Private	0.29	0.17
Pad 21B	0.02	100		State	0.11	0.07
Pad 21B	0.33	1,750		Private	2.01	1.21
Pad 22A	0.45	2,400		State	2.75	1.65
<b>Subtotal State</b>	<b>0.69</b>	<b>3,650</b>		<b>State</b>	<b>4.18</b>	<b>2.51</b>
<b>Subtotal BLM</b>	<b>0.14</b>	<b>750</b>		<b>BLM</b>	<b>0.86</b>	<b>0.52</b>
<b>Subtotal Private</b>	<b>0.38</b>	<b>2,000</b>		<b>Private</b>	<b>2.30</b>	<b>1.38</b>
<b>TOTAL</b>	<b>1.21</b>	<b>6,400</b>			<b>7.34</b>	<b>4.41</b>
<b>Combined Well Pads, Access Roads, and Pipelines</b>				<b>Short-term Acres</b>	<b>Long-term Acres</b>	
<b>TOTAL</b>				<b>State</b>	<b>12.78 ac</b>	<b>8.61 ac</b>
<b>TOTAL</b>				<b>BLM</b>	<b>6.22 ac</b>	<b>3.59 ac</b>
<b>TOTAL</b>				<b>Private</b>	<b>7.61 ac</b>	<b>4.57 ac</b>
<b>GRAND TOTAL</b>					<b>26.62 ac</b>	<b>16.77 ac</b>

The sides of the well pads would be bermed to prevent stormwater from flowing off the pad and into drainages. Topsoil would be bermed along the perimeter of the well pad for stormwater control and to allow the stockpile height to remain less than 3 feet high for topsoil vitality. The topsoil would be seeded with an approved seed mix to stabilize the stockpile. The berm would allow the stockpile to be pulled back more evenly upon site reclamation. Stormwater would be directed to an opening in the berm that would lead off the pad to a sediment trap. The channel from the opening to the sediment trap, and the overflow from the trap would be lined with rip-rap to dissipate energy and control erosion. Dejour's stormwater management efforts may include additional engineering measures, such as installation of culverts to divert water flow away from surface locations as needed.

### Construction of Proposed Access Roads

Within the project area, the road network would be improved and extended from existing and proposed roads to provide access to the proposed pad locations. The extension of the road network would involve improvement of approximately one mile of new roadways.

Roads would be designed and maintained to an appropriate standard no higher than necessary 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*.

Various segments of the proposed and existing access roads are outside Dejour's lease boundaries. To gain access for the use of existing roads and the construction and use of proposed roads, Dejour intends to apply for a right-of-way (ROW) authorization that would grant access across BLM- administered lands outside the lease boundaries, as well as across State and private lands involved in the development. Dejour would apply for ROW authorization to access the well pads. The ROW area applied for the proposed roads would be 30 feet wide.

Road running surfaces would be an all-weather type with an aggregate surface. The width could vary from 22 to 24 feet but would typically be 22 feet throughout the project area. Factors influencing width at a given location would include safety, site distance, grade, topography, anticipated traffic flow, and visual resource management concerns.

Road construction or reconstruction would include clearing and grubbing brush and trees, windrowing topsoil, constructing reinforced rolling dips and grade dips where feasible, installing culverts in ditched sections and side drainages to provide ditch relief and sediment control, constructing retaining structures on steep slopes (as approved by the BLM), placing slash and topsoil on cut-and-fill slopes, placing erosion control matting on cut-and-fill slopes as designated by the BLM, seeding of all disturbed areas outside of the travel way, and installing cattle guards and road closure gates where needed.

Revegetation of road ditches and cut-and-fill slopes would help stabilize exposed soil; reduce sediment loss, growth of noxious weeds, and maintenance costs; retain scenic quality and forage; and protect habitat. To ensure successful growth of seeded plants, topsoil would be stripped and windrowed during road construction and re-spread to the greatest degree practicable on cut slopes, fill slopes, and borrow ditches prior to seeding.

The average grade would be 10% or less wherever possible and would be exceeded only where the physical terrain or unusual circumstances require. 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 6.46 acres of short-term ground disturbance. Following interim reclamation, long-term

disturbance would be reduced by approximately 60% to a total of 3.96 acres. Road maintenance would be performed as needed to ensure safe travel.

#### Construction of Proposed Gas Gathering and Water Pipelines

A gas gathering and water pipeline network is necessary to gather and deliver gas offsite to existing Williams' main gathering lines and to transport flowback water to facilities outside the project area. Dejour would prepare and submit a ROW application to construct and operate the gas gathering lines on BLM lands not overlying the Federal leases being developed. The gas gathering system would consist of buried steel pipelines with a maximum allowable working pressure of 1,440 psi and a diameter up to 12 inches. Gathering lines that parallel new road construction would be installed in the shoulder on the uphill or cut side of the road prior to final grading and application of aggregate.

Dejour would install 4- to 12-inch-diameter water pipelines in a common trench concurrently with the gas gathering lines to minimize surface disturbance. Depending on surface landowner requirements, Dejour may install water lines on the surface where they cross privately owned surface.

The lines would be operated and maintained by Dejour through the life of the project. Dejour's ROW request for the pipelines would specify a 30-foot width long term, plus a 20-foot width as temporary work space during construction and extending for up to one year. The 30-foot width would include the 22-foot-wide road travel way. Dejour would install the gathering lines in the area disturbed in constructing the access road. Construction would be performed within this area of disturbance. The road would be the working side of the gathering line construction. Following construction, a permanent 30-foot ROW would be needed for maintenance purposes.

The pipeline trench would be excavated mechanically primarily in the uphill, or cut side of the road corridor, with an excavator (trackhoe) and would be approximately 3 feet wide and at least 4 feet deep. Gas pipeline segments would be welded together and lowered in the trench. The water line would then be placed into the ditch and separated from the gas line by sandbags, or other means. Both lines would be covered with excavated material, and then each pipeline would be pressure tested with fresh water and/or nitrogen gas to locate any leaks. Fresh water or nitrogen used for testing would be obtained offsite and transported to the testing location by truck. After testing, fresh water would be disposed at an existing offsite evaporation pond facility or another approved disposal facility; nitrogen would be vented to the atmosphere.

Dejour is planning to bore a pipeline beneath the creek to connect from the 15A Pad to convey natural gas to a tie-in with an existing gas gathering pipeline operated by another operator. The proposed alignment would cross beneath the creek bed at a depth designed to ensure that the pipeline is not subject to exposure and rupture as a result of stream scour. The entry and exit points of the pipeline bore would be outside the riparian habitat on both sides of the creek to prevent direct impacts to the riparian ecosystem. Additionally, due to its close proximity to the proposed 15A Pad and the pipeline bore to Garfield Creek, the project would be managed to protect the creek, wetlands and riparian corridor from indirect impacts. Standard and site-specific COAs would be applied to this activity Appendix A. Approval of the 15A Pad would be contingent on review and approval by BLM of a bore design and construction plan submitted by Dejour.

#### Mitigation Common to All Construction Operations

As part of the DMDP, Dejour is initially submitting 14 APDs, with up to 54 additional APDs to follow over the development phase of the project. The APDs would include a drilling plan and a surface use plan of operations (SUPO) incorporating drilling and mitigation measures common to all of the Federal,

Fee, and split-estate well pads within the DMDP area. Site-specific mitigation measures not incorporated by Dejour would be enforced as COAs.

### ***2.1.1 Drilling and Completion Phase***

Dejour's drilling operations would be conducted in compliance with all Federal Onshore Oil and Gas Orders, all applicable rules and regulations, and Notices to Lessees. Drilling rigs in the DMDP area would be targeting natural gas-producing horizons in the Williams Fork and Iles formations at depths of 6,500 to 8,500 feet. Each well would require approximately 15 days to drill and 30 days to complete. Pads with multiple wells would be occupied for a more extended period of time, depending on the number of wells drilled. Production results for wells drilled during the first year would be used to plan and design the drilling program for subsequent years and for subsequent phases.

Dejour initially intends to drill and complete up to 12 wells on each pad in Section 21 and Section 22 and up to 2 wells on the pad in Section 15 for the first phase. Consequently, drilling operations would be conducted in more than one phase for all of the 68 proposed wells. Development would be highly sensitive to price of gas and cost of services. The BLM would be notified promptly of scheduling changes. Depending on the duration of any period of inactivity on a pad, the BLM may require that Dejour implement temporary reclamation involving seeding of bare areas to reduce erosion, dust generation, and infestations of weeds. BLM typically requires temporary reclamation of pads to be left open for more than 1 year. If Dejour's operations result in temporary cessation of drilling sufficient to trigger this requirement, Dejour would implement temporary reclamation as directed by the BLM, as well as other BMPs deemed necessary by the BLM, in collaboration with the affected surface owner(s). These BMPs are likely to focus on erosion and stormwater control, dust abatement, weed control, wildlife protection measures, and visual resource protection measures. Because of geologic and market uncertainties, Dejour may drill fewer wells than those described in the DMDP.

Prior to drilling below the surface casing, well control equipment (Blowout Preventer and Choke Manifold) would be installed on the surface casing, and both the well control equipment and surface casing would be tested to ensure adequate well control. The well control equipment would meet the minimum standards of Onshore Oil and Gas Order No. 2 (Drilling Operations), and the BLM would be notified in advance of all pressure tests in order to be present and witness the tests. Charts of the test are kept on location and are available to the BLM for inspection at any time.

Dejour would use a truck-mounted drilling rig to drill the rat holes and set conductor pipe. Once the conductor pipe is set and cemented in place to the surface, a conventional drilling rig would be moved in and rigged up to spud (begin drilling) the surface hole and production holes to total depth. A downhole motor is used to directionally drill the well and to increase penetration rate. The motor is powered by drilling fluids that are used to drive the motor, cool the bit, and carry drill cuttings to the surface. Conventional water-based drilling mud/fluids would be utilized in the drilling of the wells.

For the directional wells, an S-shaped directional design would be used to reach the targeted well locations. In general, a target radius of 50 feet would be used. Specific directional plans for each well would be included with the APDs. Downhole operations would be done with directional tools to facilitate proper direction and path of the well.

Drill cuttings from the wellbore (mainly shale, sand, and miscellaneous rock minerals) would be directed to a reserve pit and eventually buried on location. The reserve pit would adhere to BLM and COGCC requirements. No hazardous substances would be placed in any pits.

After drilling the hole to its total depth, logging tools would be run into the well to evaluate the potential hydrocarbon resource. If the evaluation indicates adequate hydrocarbon resources are present and recoverable, then steel production casing would be run and cemented in place in accordance with the well design, as approved by the BLM. The proposed casing and cementing program would be designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals.

After production casing has been cemented in place, completion equipment would be moved onto the location. Well completion consists of running a cement bond log to evaluate the cement integrity and to correlate the cased hole logs to the open hole logs, perforating the casing across the hydrocarbon-producing zones, and stimulating the formation to enhance the production of oil and gas. The typical method used for stimulation consists of hydraulic fracture treatment of the reservoir, in which sand with fluids is pumped into the producing formation with sufficient hydraulic pressure to fracture the rock formation. The sand serves as a proppant to keep the created fracture open, enhancing the flow of reservoir fluids to the wellbore.

Initially, the source of water for drilling purposes would be the Colorado River or from public or private water entities. The water would be transported by pipeline or licensed haulers. Water permits would be filed appropriately by the licensed haulers. Dejour plans to build a fresh water pond on Fee surface to stage fresh water for drilling wells at the three pads in Sections 21 and 22 on Jolley Mesa. After drilling is complete, the pond would serve as a water source for grazing.

During completion activities, all hydraulic fracturing flowback water would be contained in a surface pit on the 21A Pad during completion operations and would be recycled for re-use or trucked off site to approved commercial disposal facilities. The pit would be lined and netted in accordance with BLM and COGCC standards.

### ***2.1.3 Production Phase***

#### **Surface Facilities**

Surface facilities at each well pad location would consist of wellheads, separation units, gas metering units and above ground condensate and produced water tanks with approximately 300- to 400-barrel (bbl) capacities each. When needed for visual mitigation, low profile 250-bbl steel tanks would be installed. Multi-well locations would share production equipment, whenever feasible, to minimize surface occupancy and disturbance. All production equipment would be located on the associated pad, except for well pad 15A (in Section 15), where the equipment would be located on a nearby central production facility (Figure 2).

All production equipment located on, or associated with the development of Federal leases would be located to minimize visual impact and painted with a BLM-specified color selected to blend with the surrounding landscape. The production equipment would be fenced to prevent contact with wildlife/livestock. Telemetry equipment would be used to remotely monitor well conditions. The use of telemetry equipment would minimize traffic to, and from, the well locations. Automated tank gauging would also be employed to minimize the risk of spills.

Tank batteries would be placed within secondary containment to prevent the offsite migration of accidentally spilled condensate or produced water. Secondary containment would consist of corrugated steel containment rings. Construction of the containment rings surrounding the tank batteries would be conducted to prevent lateral movement of fluids through an impermeable barrier attached to the rings and laid under the tanks. Secondary containment would be sized to

contain a minimum of 110% of the storage capacity of the largest tank within the barrier. All loading lines would be placed inside the containment barrier.

#### Gas Gathering

Dejour is pursuing a contractual agreement with Williams to gather Dejour's gas in the project area. It is proposed that the gas produced would be gathered and would flow to the existing Williams' gathering line system in the project area (Figure 3). Dejour does not currently anticipate a need for field compression.

#### Produced Water Management

During production, permanent 300- to 400-bbl steel tanks or, where needed for visual mitigation, 250-bbl low-profile steel tanks, would be installed on the well pads or offsite facilities to capture and contain produced water. These tanks would remain onsite for the life of the wells. Produced water captured in the storage tanks would be transferred through buried pipelines or, when the pipeline system is not operational (such as during maintenance), hauled in trucks to centralized tank facilities. Once collected at a central site, the produced water would be recycled for use in drilling and completion operations, processed into freshwater by the use of a distillation system, or trucked offsite to an approved commercial disposal facility. Condensate would be captured at the well site in steel storage tanks and transported to market by tanker trucks.

#### Interim Reclamation

After completion activities, Dejour would reduce the size of the well pad to the minimum surface area needed for production facilities and future workovers, while providing for reshaping and stabilization of cut-and-fill slopes. In brief, interim reclamation would be accomplished by grading, leveling, and seeding, as recommended by the BLM or landowner. Interim reclamation would reduce the disturbed area at each pad to approximately 4 acres or less after well development. The following is a summary of interim reclamation activities Dejour would implement after all wells have been completed on a location:

- The well location and surrounding area(s) would be cleared of all debris, materials, and trash not required for production. Other waste and spoil materials would be disposed at a local landfill.
- All pits, cellars, rat holes, and other boreholes at drilling locations unnecessary for further lease operations would be back filled to conform to surrounding terrain after the drilling rig is released.
- Areas not necessary for production and future workovers would be reshaped to resemble the original landscape contour. Stockpiled topsoil would be redistributed and disked on the area to be reclaimed and reseeded according to BLM recommendations.

#### Workovers and Recompletions

Periodically, the workover or recompletion of a well may be required to maintain efficient production. Workovers may include repairs to the wellbore equipment (casing, tubing, rods, or pump) the wellhead, or the production facilities. These repairs would usually be completed during daylight hours. The frequency of this type of work cannot be accurately projected because workovers vary from well to well. In the case of multi-well pads, space for equipment would usually be limited to the "in-use" (i.e., disturbed) area of the surface location, although it is possible that interim reclamation could be delayed by workover operations. In the case of a well recompletion, a water completion pit may be needed.

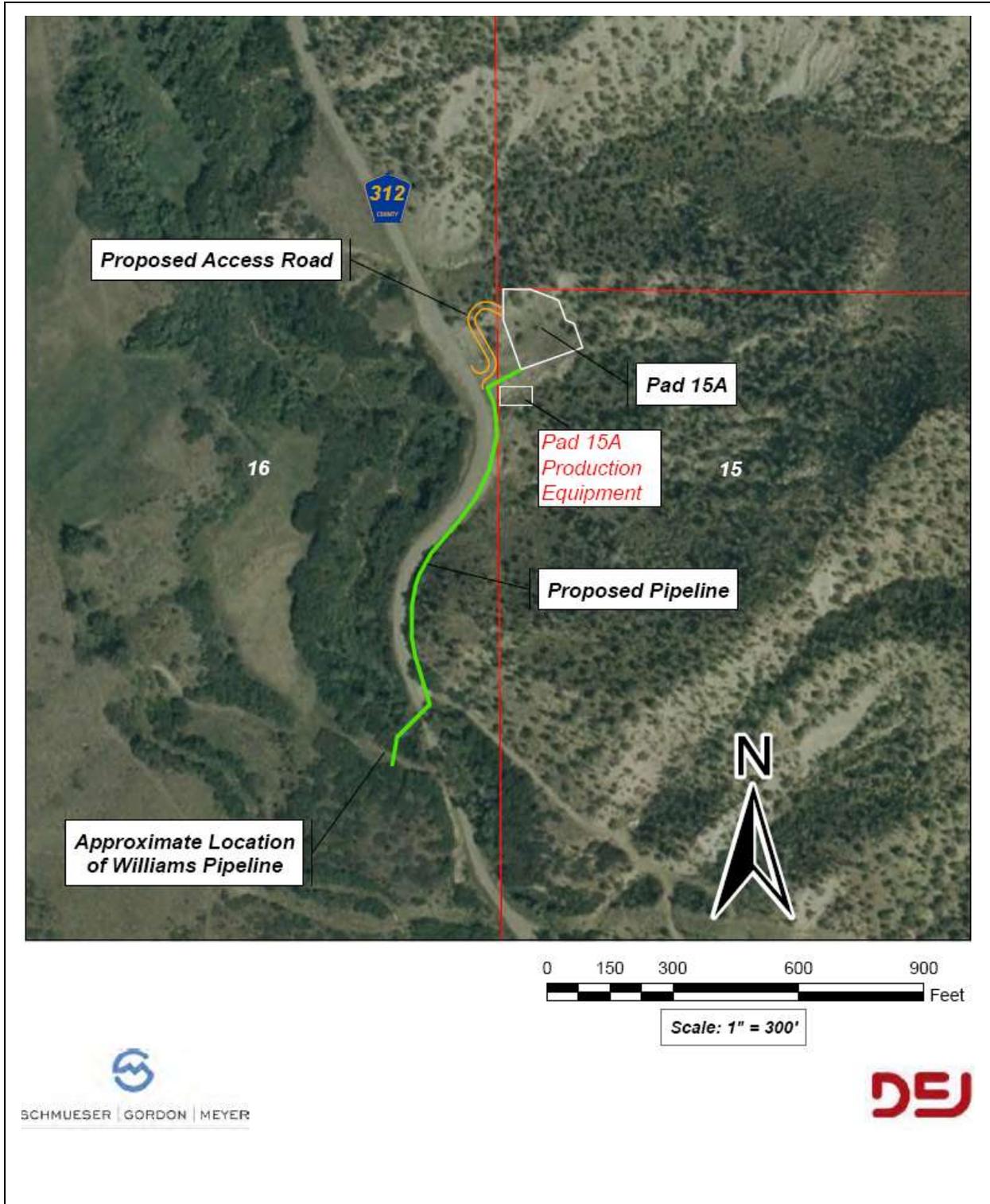


Figure 2. Dejour Proposed Section 15 Pad, Road, and Pipeline

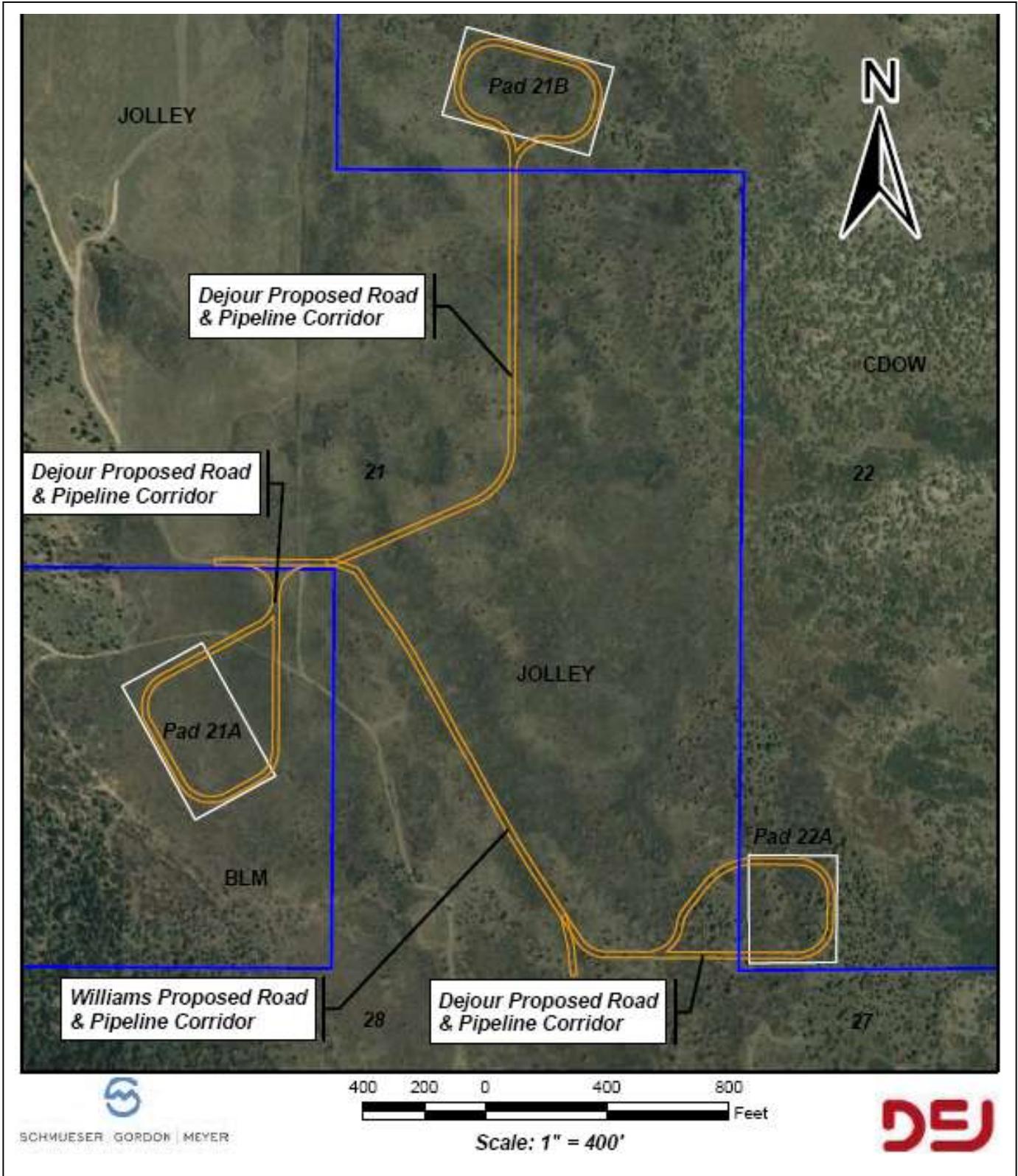


Figure 3. Dejour Section 21 Proposed Pads, Roads, and Pipelines

### ***2.1.4 Plugging/Abandonment and Final Reclamation Phase***

#### Well and Pipeline Plugging and Abandonment

Upon abandonment at the end of its productive life, each well would be plugged with cement and its related surface equipment would be removed. Subsurface pipelines would be plugged at specific intervals and site contouring would be accomplished using appropriate heavy equipment. All disturbed surface soil would be reseeded with a BLM-approved native seed unless a different mix is approved by the surface owners on non-BLM surface lands. A Sundry Notice would be submitted by Dejour to the BLM describing the technical or environmental aspects of final plugging and abandonment. This notice would describe final reclamation procedures and any mitigation measures associated with the final reclamation performed by the operator. The BLM and COGCC standards for plugging and abandonment would be followed. A configuration diagram, a summary of plugging procedures, and a job summary with techniques used to plug the wellbore (e.g., cementation) would be included in the Sundry Notice.

#### Final Reclamation

All surface disturbances would be recontoured and revegetated according to an approved reclamation plan. Final well site reclamation would be performed and monitored in accordance with the 1998 GSRA reclamation policy, including control of noxious weeds. Further information on reclamation standards is available in Appendix I of the 1999 Oil & Gas Leasing & Development Final Supplemental Environmental Impact Statement (FSEIS) (BLM 1999a). One of the basic goals of the policy is to “establish desirable (seeded and native) vegetation to set the stage for the natural process to restore the site.” Consequently, one of the goals in this proposal is to accomplish as much reclamation on each well pad during the life of the well as possible, even on those pads with a large final reclamation or “in -use” area. Unreclaimed areas or reclaimed areas that do not meet the objective of 3 to 4 years of sustained reclamation (known as “operator complete”) would undergo the reclamation retreatment measures described in the SUPO, submitted as part of the DMDP, and referenced with each APD.

Dejour would restore the well locations and access roads to approximately original contours. During reclamation of these sites, fill material would be pushed into cuts and over the back slope. No depressions would be left that would trap water or form ponds. Upon completion of backfilling, leveling, and recontouring, the stockpiled topsoil would be evenly spread over the reclaimed area(s). All disturbed surfaces would be reseeded with a seed mixture approved by the BLM or requested by the private landowner. The seedbed would be prepared by disking and roller-packing along the natural contours. Seed would be drilled on contours at a depth no greater than 0.5 inch. In areas that cannot be drilled, seed would be broadcast at double the seeding rate and harrowed into the soil.

Certified weed-free seed would be used per BLM policy. Seeding shall occur within 24 hours following completion of final seedbed preparation to reduce the potential for establishment of weeds and before crusting of the soil, which can impede germination. If the seeding is unsuccessful, Dejour would be required to make subsequent seedings. Reclamation would be considered successful when the objectives described in the GSRA Reclamation Policy are achieved. Revegetation would be considered successful when the following objectives are met:

- Short-term – Desirable perennial vegetation at the end of the second growing season appears self-sustaining and capable of continued establishment.
- Intermediate – Desirable perennial vegetation at the end of the fifth vegetation provides adequate cover and erosion protection and is free of weed infestations.

- Long-term – Desirable perennial vegetation approximates the original pre-disturbed condition in terms of canopy cover, diversity, and species composition.

### **2.1.5 Road Maintenance**

Access roads would be inspected by the BLM and, if necessary, maintained by Dejour on an as-needed or quarterly basis (at a minimum) to include such items as:

- road surface grading and graveling
- relief ditch, culvert and cattle guard cleaning
- erosion control measures for cut-and-fill slopes and other disturbed areas
- road closures in periods of excessive soil moisture to prevent rutting caused by vehicular traffic
- road and slope stabilization measures as required until final abandonment and reclamation
- weed control
- dust abatement techniques and frequency as determined by the BLM, CPW, private landowners, and Dejour

### **2.2 No Action Alternative**

Under the No Action Alternative, BLM would deny the APDs for all of the Federal wells, and none of the project components described above would be implemented.

## **3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

During its internal scoping process for this EA, pursuant to the National Environmental Policy Act (NEPA), BLM resource specialists identified the following elements of the natural and human environment as present in the project vicinity and potentially affected by the project:

Access and Transportation	Prime and Unique Farmland
Air Quality	Riparian and Wetland Areas
Cultural Resources	Socio-Economics
Fossil Resources	Soils
Geology and Minerals	Special Status Species
Invasive Non-Native Plants	Vegetation
Migratory Birds	Visual Resources
Native American Religious Concerns	Wastes, Hazardous and Solid
Noise	Water Quality, Surface and Ground
	Wildlife, Aquatic and Terrestrial

In the analysis of potential adverse impacts associated with implementation of the Proposed Action, the BLM evaluates an oil and gas project in light of restrictions on surface use attached to the Federal leases as protective stipulations and on other standard or site-specific restrictions applied as conditions of approval (COAs) under BLM's regulatory authority. Table 2 provides a summary of lease stipulations that would apply to the Proposed Action. Applicable COAs are presented in Appendix A.

<b>Table 2. Summary of Lease Stipulations Applicable to the Proposed Action*</b>			
<i>Lease Stipulations</i>		<i>Lands within DMDP where Applied</i>	
		<i>Lease COC65531 (Section 15 Pad)</i>	<i>Lease COC66370 (Section 21/22 Pads)</i>
<b>No Surface Occupancy (NSO)</b>	<b>GS-NSO-04:</b> No surface occupancy and use in the Garfield Creek State Wildlife Area.	Assumed for purposes of analysis **	Sec. 21: E2NE Sec. 22: All lands
	<b>GS-NSO-11:</b> No surface occupancy in wildlife seclusion areas.	Not applicable to Proposed Action	
	<b>GS-NSO-15:</b> No surface occupancy or use on slopes steeper than 50%.	Not applicable to Proposed Action	Sec 21: E2NE, SWSE Sec. 22:SWNW, SESW
	<b>GS-NSO-18:</b> No surface occupancy in the I-70 viewshed.	Not applicable to Proposed Action	Sec. 21: SESW, SWSE
<b>Controlled Surface Use (CSU)</b>	<b>GS-CSU-04:</b> Controlled surface use for erosive soils on slopes steeper than 30%.	Sec. 15: W2NE, NW, N2SW	Sec. 21: All lands Sec. 22: All lands
	<b>GS-CSU-05:</b> Controlled surface use for Visual Resource Management of Class II areas.	Sec. 15: W2NW, NWSW	
<b>Timing Limitation (TL)</b>	<b>GS-TL-01:</b> No surface use is allowed during the following time period December 1 through April 30 for the purposes of minimizing watershed damage and protecting important seasonal wildlife habitat. This stipulation does not apply to operation and maintenance of production facilities. Any changes to this stipulation would be made in accordance with the land use plan and/or the regulatory provisions.	Sec. 15: All lands in lease	Sec. 21: All lands Sec. 22: All lands
* As specified in the current CRVFO land use plan (BLM 1991) ** See discussion in Section 1.4, Land Use Plan Conformance Review			

### 3.1 Access and Transportation

#### Affected Environment

The primary access route to the area would be from Interstate 70 (I-70) exiting at Silt, Colorado (Exit 97). Directions to the DMDP area (Section 21 and 22 well pads) are as follows: After exiting I-70, proceed to the frontage road at the south end of the Silt interchange, proceed in a general easterly direction along the frontage road 0.4 mile to the intersection with County Road (CR) 218 on the right; proceed right in a general southerly direction, crossing the Colorado River (where it becomes CR 311) for 0.6 mile to the intersection. Proceed left along CR 311 in a general easterly direction for 1.4 miles to the intersection with CR 335. Bear right, staying on CR 311 in a general southerly direction for 0.9 mile to a private road. Turn left onto the private road and proceed in a general easterly direction for 0.6 mile to an intersection with another private road locally known as the Jolley Road. Proceed through the intersection and stay on the Jolley Road for approximately 5.4 miles to Pad 21A and the project area.

Directions to the Garfield Creek area (Section 15 well pad) are as follows: After exiting I-70, proceed to the frontage road at the south end of the Silt interchange, then proceed east along the frontage road 0.4 mile to the intersection with CR 218 on the right; proceed right in a southerly direction crossing the Colorado River (where the road becomes CR 311) for 0.6 mile to an intersection. Proceed left along CR 311 in a general easterly direction continuing for 1.4 miles to the intersection with CR 335. Proceed in a

general easterly direction along CR 335 for 3.8 miles to Garfield Creek Road (CR 312). Proceed in a general southerly direction approximately 1.8 miles to the well pad on the east side of the road.

Environmental Consequences

*Proposed Action*

Within the project area, the road network would be extended from existing roads to access to the proposed pads. Extension of the road network would involve construction or improvement of approximately 1 mile of roads. The Proposed Action would result in a substantial increase in truck traffic related to development of the 68 wells. The largest increase would be during rig-up, drilling, and completion. Approximately 160 truck trips over a 30-day period would be required to support drilling and completion of each well (Table 3). During production, traffic would then decrease to occasional visits for monitoring or maintenance. Periodic workover activities would require three to five truck trips per day for 7 days.

<b>Table 3. Traffic Associated with Drilling and Completion Activities</b>		
<i>Vehicle Class</i>	<i>Trips per Well</i>	<i>Percent of Total</i>
16-wheel tractor trailers	88	7.6%
10-wheel trucks	216	18.6%
6-wheel trucks	452	39.0%
Pickup trucks	404	34.8%
Total	1,160	100.0%
Source: BLM 2006. Note: Trips by different vehicle types are not necessarily distributed evenly during the drilling process. Drilling and completion period is approximately 30 days per well.		

Degradation of development roads may occur due to heavy equipment travel and fugitive dust and noise would be created. Mitigation measures (Appendix A) would be required as COAs to ensure adequate dust abatement and road maintenance occur.

*No Action Alternative*

Under the No Action Alternative, BLM would deny the APDs for all of the Federal wells, and none of the project components described above would be implemented.

**3.2 Air Quality**

Affected Environment

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 project 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>), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter less than 10 microns (µ) in diameter (PM<sub>10</sub>), and particulate matter less than 2.5 µ in diameter (PM<sub>2.5</sub>).

The project 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 4, 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 Colorado Department of Public Health and Environment (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.

<b>Table 4. Air Pollutant Background Concentrations, Colorado and National Ambient Air Quality Standards, and Prevention of Significant Deterioration Increments.</b>					
<i>Pollutant/Averaging Time</i>		<i>Measured Background</i>	<i>CAAQS/or NAAQS</i>	<i>Incremental Increase Above Legal Baseline</i>	
				<i>Class I</i>	<i>Class II</i>
Carbon Monoxide (CO) <sup>1</sup>	1-hour	4,656 µg/m <sup>3</sup>	40,000 µg/m <sup>3</sup> (35 ppm)	n/a	n/a
	8-hour	2,328 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 Arithmetic Mean	0.016 ppm	0.053 ppm	2.5 µg/m <sup>3</sup>	25 µg/m <sup>3</sup>
Ozone <sup>1</sup>	8-hour	0.065 ppm (Rifle)	0.075 ppm	n/a	n/a
Particulate Matter (PM <sub>10</sub> ) <sup>3</sup>	24-hour Annual	67 µg/m <sup>3</sup> (Rifle)	150 µg/m <sup>3</sup>	8 µg/m <sup>3</sup>	30 µg/m <sup>3</sup>
		25.7 (Rifle)	50 µg/m <sup>3</sup>	4 µg/m <sup>3</sup>	17 µg/m <sup>3</sup>
Particulate Matter (PM <sub>2.5</sub> ) <sup>1</sup>	24-hour Annual	34.5 µg/m <sup>3</sup> (GJ)	35 µg/m <sup>3</sup>	2 µg/m <sup>3</sup>	9 µg/m <sup>3</sup>
		9.3 µg/m <sup>3</sup> (GJ)	15 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>	4 µg/m <sup>3</sup>
Sulfur Dioxide (SO <sub>2</sub> ) <sup>4</sup>	3-hour	66.7 µg/m <sup>3</sup>	700 µg/m <sup>3</sup> (0.27 ppm) <sup>5</sup>	25 µg/m <sup>3</sup>	512 µg/m <sup>3</sup>
	24-hour	34.6 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	5.3 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, 2010 (Chick 2011) <sup>2</sup> Background data collected by Encana at site north of Parachute, 2007 (CDPHE 2008) <sup>3</sup> Background data collected in Grand Junction, 2010 (Chick 2011) <sup>4</sup> Background data collected at Unocal site, 1983-1984 (CDPHE 2008). <sup>5</sup> Colorado 3-hour AAQS = 700 µg/m <sup>3</sup> .					

Air pollutants measured in the region for which ambient air quality standards exist include CO, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>, and SO<sub>2</sub>. Federal air quality regulations adopted and enforced by CDPHE limit incremental emissions increases to specific levels defined by the classification of air quality in an area. The PSD Program is designed to limit the incremental increase of specific air pollutant concentrations above a legally defined baseline level. Incremental increases in PSD Class I areas are strictly limited, while increases allowed in Class II areas are less strict.

The project area and surrounding areas are classified as PSD Class II. The PSD Class I areas located within 100 miles of the project area are Flat Tops Wilderness (approximately 25 miles north), Maroon Bells – Snowmass Wilderness (approximately 35 miles south), West Elk Wilderness (approximately 60 miles southeast), Black Canyon of the Gunnison National Monument (approximately 65 miles south), and Eagles Nest Wilderness (approximately 60 miles east). Dinosaur National Monument (approximately 80 miles northwest) is listed as a Federal Class II area but is regulated by CDPHE as a Class I area for SO<sub>2</sub>. Regional background pollutant concentrations and applicable standards or limits are listed in Table 4.

## Environmental Consequences

### *Proposed Action*

The CDPHE, under its EPA-approved state implementation plan, is the primary air quality regulatory agency responsible for determining potential impacts once detailed industrial development plans have been made; those development plans are subject to applicable air quality laws, regulations, standards, control measures, and management practices. 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.

The DMDP includes constructing, drilling, completing, and operating up to 68 new wells over an estimated 5 years. Although the impacts to air quality from these wells are disclosed in this MDP, the drilling and operation is permitted with the approval of an APD for each well. Individual wells would require approximately 7 to 12 days to drill and approximately 15 to 30 days to complete. Air quality would decrease during construction of access roads, pads, and pipelines and drilling and completing the wells. Pollutants generated during construction activities would include combustion emissions and fugitive dust associated (PM<sub>10</sub> and PM<sub>2.5</sub>) with construction equipment and vehicles. Construction activities for the well pad, access road, and pipelines would occur between the hours of 7:00 a.m. and 6:00 p.m. each day. Once construction activities are complete, air quality impacts associated with these activities would also cease. Fugitive dust from mobilization and rigging up the drill rig would also occur however impacts associated would be minor and short lived. Emissions associated with drilling and completing the wells would also be greatly reduced to emissions associated with long term natural gas and condensate production.

A regional air model addressing air quality impacts of current and future oil and gas activities within the CRVFO has recently been completed for the BLM by Tetra Tech, Inc. and its subcontractor, URS Corporation. The methods and results of that modeling are presented in an Air Resources Technical Support Document (ARTSD) (BLM 2011). The air quality model addressed impacts associated with emissions of greenhouse gases (GHGs), "criteria pollutants" (CO, NO<sub>2</sub>, SO<sub>2</sub>, ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>), hazardous air pollutants (HAPs) including BTEX (benzene, ethylbenzene, toluene, and xylenes), formaldehyde, and n-hexane. The modeling also addressed potential impacts on visibility due to particulates and "photochemical smog" (caused by chemical reactions in the atmosphere) and on lake chemistry of selected pristine lakes due to modeled deposition rates of sulfur and resultant impacts on acid neutralizing capacity of the lake waters. The visibility analysis predicted a slight impact (one day per year with a reduction in visibility of 1deciview or greater) in the Flat Tops Wilderness and no days with 1 deciview or greater reduction in visibility at all other modeled Class I and II receptors. For the remaining pollutants analyzed, modeled levels of future oil and gas development within the CRVFO would have no or negligible long-term adverse impacts on air quality. Since the Proposed Action is within the scope of the future development modeled, no significant adverse impacts on air quality are anticipated.

The air quality model incorporated assumptions about various development and mitigation scenarios, many of which have been integrated into the Proposed Action by Dejour or would be imposed by the BLM as COAs (Appendix A). These include use of directional drilling to reduce the number of well pads, piping instead of trucking of fluids to a centralized collection facility, flaring instead of venting of natural gas during well completions, self-contained flare units to minimize emissions to the atmosphere, and use of closed-loop drilling. Closed-loop drilling minimizes emissions by recycling drilling muds and separating fluids and drill cuttings, thus eliminating open pits containing petroleum fluids. In addition to minimizing emissions associated with drilling and completion activities, these mitigation measures would

also significantly reduce fugitive dust and vehicle tailpipe emissions by greatly reducing the volume of truck traffic required to support the operations.

Generation of fugitive dust as a result of construction activities and travel on unpaved access roads would be further reduced by BLM's requirement that Dejour apply gravel to a compacted depth of 6 inches on the access road, apply water to the access road during the development phase, and apply a dust suppressant surfactant approved by the BLM throughout the long-term production phase (Appendix A).

Emissions of volatile organic compounds (VOCs) such as the BTEX constituents of condensate vary depending on the characteristics of the condensate, the volume produced, and tank operations. Operators are required to control emissions of VOCs from condensate tanks under CDPHE Regulation 7. If deemed necessary by the State, Dejour may be required to install a vapor recovery or thermal destruction system to further reduce VOC concentrations.

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 (NAS) 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" (NAS 2007). Other theories about the effect of GHGs on global climate change exist.

The recent air modeling for the CRVFO inventoried and assessed GHG emissions associated with various scenarios of future oil and gas development. In all scenarios modeled, the GHG emissions would not increase the total US natural gas sector emissions by more than 0.5%. 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. While any oil and gas development project 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 Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action and associated pad, road, and pipeline construction. No new surface disturbance would occur under the No Action Alternative, thus eliminating impacts from this development to air quality.

### **3.3 Cultural Resources**

#### Affected Environment

Five intensive Class III cultural resource inventories (CRVFO# 1111-7, 1111-30, 344, 158, and 907) were conducted in the project area, two specifically for the proposed DMDP well pad locations and related linear routes project. Grand River Institute performed two of the most recent inventories specifically for

this project. Inventories and pre-field file searches of the Colorado State Historic Preservation Officer (SHPO) database and CRVFO cultural records identified four isolated finds within the project area. Isolated finds are by definition not eligible to the National Register of Historic Places (NRHP). Therefore, no “historic properties” were identified within the area of the Proposed Action. “Historic properties” are cultural resources that are eligible or potentially eligible for inclusion on the NRHP.

### Environmental Consequences

#### *Proposed Action*

The implementation of the Proposed Action would have no direct impacts to known “historic properties,” as none has been identified in the project’s area of potential effect. Therefore, the BLM made a determination of “**No Historic Properties Affected.**” 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)]. As the BLM has determined that the Proposed Action would have no direct impacts to known “historic properties,” no formal consultation was initiated with the SHPO. “Historic properties” are cultural sites or resources identified as eligible for the National Register of Historic Places. Cultural resource types typically found in the surrounding areas include: prehistoric open camps, lithic scatters, historic ditches, historic structures, historic trash scatters and dumps, and isolated prehistoric and historic finds.

A standard Education/Discovery COA for cultural resource protection would be attached to the APDs (Appendix A). The importance of this COA would be stressed to the operator and contractors, informing them of their responsibilities to protect and report any cultural resources encountered during construction.

Indirect, long-term cumulative impacts from increased access and the presence of project personnel could result in a range of impacts to known and undiscovered cultural resources in the vicinity of the project location. Impacts could range from accidental damage or vandalism to illegal collection and excavation.

#### *No Action Alternative*

Under the No Action Alternative, BLM would deny the APDs for all of the Federal wells. Consequently, none of the project components described above would be implemented. Therefore, potential impacts from increased access and the presence of project personnel would not occur and the possibility of accidental damage, vandalism, illegal collection, and excavation would not be increased.

### **3.4 Fossil Resources**

#### Affected Environment

The predominant bedrock formations present at or near the surface within the DMDP project area are the Wasatch Formation (including the Fort Union Formation or equivalent at its base) and the Ohio Creek Formation. Isolated areas of Quaternary gravels and alluvium, wind-blown loess, colluvium, and weathered volcanic boulders and gravel are interspersed throughout the DMDP area and cover older Wasatch Formation sediments. Occurring in varying thicknesses, these Quaternary sediments are considered Potential Fossil Yield Classification 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 Wasatch Formation is a BLM Condition 4 formation, defined as an area that is known to contain vertebrate fossils or noteworthy occurrences of invertebrate fossils. These types of fossils are known to

occur or have been documented, but may vary in occurrence and predictability. The Wasatch Formation is divided into the early Eocene Shire, the Paleocene age Molina and Atwell Gulch members. All members of the Wasatch Formation contain vertebrate fossils in varying abundances (Murphy and Daitch 2007). Rocks of the Wasatch Formation are lithologically very similar to one another throughout the Piceance Creek Basin as heterogeneous continental fluvial deposits with interfingering channel sandstone beds and overbank deposits consisting of variegated claystone, mudstone, and siltstone beds (Franczyk et al. 1990). Eocene mammals have been found in the lower part of the Shire member.

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

### Environmental Consequences

#### *Proposed Action*

Although mapped as the predominant surface formation of the DMDP area, field inspection revealed the Wasatch exposed only in a few outcrops found on mesa sides and summits. The thickness of the Quaternary sediments 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 pads and facilities (especially pipeline) construction. In general, alluvium, colluvium, and other unconsolidated sediments are much less likely than bedrock to contain well-preserved fossils.

An examination of the BLM paleontology database indicates that there is one known fossil occurrence within 0.5 mile of the DMDP boundary. The closest known site occurs in Section 15, T6S, R91W. Three additional sites have been identified to the northwest in Section 15, T6S, R92W, over 3 miles from the nearest proposed pad site. Areas covered with thick vegetation and soil cover do not usually yield fossil resources, but onsite inspections would be conducted for proposed facilities that are located on or within 200 feet of Wasatch Formation bedrock surface exposures. In the event paleontological resources are encountered, a standard paleontological COA would be attached to the APDs (Appendix A).

#### *No Action Alternative*

Because no new ground-disturbing activities would result under this alternative, impacts to paleontological resources at or near the surface would not occur. Subsurface fossil resources are likely to be destroyed or damaged during activities involving drilling through or hydrofracturing bedrock at depth, but these fossils are not currently available for scientific or other purposes, nor would they become available for such purposes unless exposed by erosion during subsequent geologic time.

## **3.5 Geology and Minerals**

### Affected Environment

The development area is located near the eastern margin of the Colorado Plateau physiographic province (Fenneman 1946), a region characterized by dissected plateaus of strong relief. A broad, asymmetric, southeast-northwest trending structural basin, the Piceance Basin contains stratified sediments ranging in age from Cambrian through middle Tertiary up to 20,000 feet thick. This structural basin lies between the

White River uplift to the northeast, the Gunnison uplift to the south, and the Uncompahgre swell to the west (George 1927, Weiner and Haun 1960).

Bedrock exposed within the proposed development project is the Tertiary Wasatch Formation. The Wasatch Formation consists of variegated siltstone, claystone, and sandstones, and ranges from 1,000 to 2,500 feet thick. The Wasatch Formation is underlain unconformably by the Mesaverde Group. The Mesaverde Group is composed of mudstones and sandstones with interlayered coal beds and ranges in thickness from about 3,000 feet to over 7,000 feet. The Mesaverde Group has also been referred to as the Mesaverde Formation, which includes informal subdivisions based on gas productivity characteristics.

In proposed development area, the Wasatch Formation is mantled by unconsolidated sedimentary surface deposits of Quaternary age in the form of colluvium. The thickness of these unconsolidated sediments is uncertain, but the depth to the underlying Wasatch Formation may be determined during construction excavation. Table 5 lists the geologic formations present within the proposed project area.

<b>Table 5. Geologic Formations within the Study Area</b>				
<i>Map Symbol</i>	<i>Formation Name</i>	<i>Age</i>	<i>Characteristics</i>	<i>Location</i>
Qfy	Younger Fan deposits	Holocene	Extremely poorly sorted matrix supported gravels	Alluvial and colluvial fans
Qsw	Sheetwash alluvium	Holocene and Upper Pleistocene	Poorly sorted sand, silt, clay, pebbles, and cobbles.	Streams, flood plains and fans
Qc	Colluvium	Holocene and Upper Pleistocene	Poorly sorted sand, silt, clay, and pebbles to boulder-sized clasts.	Slope Deposits and fans.
Qlo	Loess	Upper-Middle Pleistocene.	Well sorted fine sand, silt, and clay.	Wind deposited. Mantles predominate surface structures
Tw	Wasatch Formation	Eocene, Paleocene	Red, gray, and brown sandstone and siltstone and red, green, and gray shale	Base of mesas and predominant surface exposures north and south of the Colorado River

Source: Green et al. 1991

The Mesaverde Group is the target zone of the proposed drilling program. Made up of the Williams Fork and Iles Formations, sediments of the Mesaverde Group are composed of marine sandstones and transitional to non-marine beds of coal, shale, and sandstone. These sediments were deposited marginal to the great Cretaceous seaway. The oscillating shoreline of this sea, due to the rise and fall of sea level, left behind a complex of transgressive and regressive sedimentary sequences of nearshore and offshore sediments that define the Mesaverde Group.

Production is derived from three reservoir intervals, which include the Wasatch Formation and the Williams Fork and Iles Formations. The latter two make up the Upper Cretaceous Mesaverde Group. The proposed drilling program would target the sandstone sequences of the Upper Williams Fork Formation, which provide most of the natural gas production volumes (Lorenz 1989). The upper portions of the Williams Fork include fluvial point bar, floodplain, and swamp deposits. The Lower Williams Fork Formation includes delta front, distributary channel, strandplain, lacustrine, and swamp environments (Hemborg 2000), while the sandstones and coalbeds of the Iles Formation were deposited in a wave-dominated coastal setting (Johnson 1989, Lorenz, 1989). The source rocks are interbedded and thermally mature gas-prone shales, mudstones, siltstones, and coals. The reservoir rocks are the fine to medium-grained Williams Fork sandstones, varying in thickness from less than 10 feet to more than 50

feet (Spencer 1988), creating an interbedded relationship between source and reservoir. The trapping mechanism of the gas is both stratigraphic and diagenetic.

### Environmental Consequences

#### *Proposed Action*

If the proposed wells are proven feasible, 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. Substantial reserves have been known to be trapped within the tight sands of these reservoirs since the late 1950s, but only within the last decade, and particularly within the last few years, has the integrated application of new technologies turned the tight gas sands of the Mesaverde Group into a profitable play (Kuuskraa 1997). Natural fracture detection, advanced log analysis, more rigorous well completions and recompletions, and denser spacing have increased the amount of recoverable gas within these reservoirs.

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. Hydraulic fracturing or “fracing” would be utilized to create fractures within the formation to allow gas production from the wells. Tight gas sands refer to low permeability sandstone reservoirs that produce primarily dry natural gas. Typically, these reservoirs cannot be produced at economic flow rates or volumes unless the well is stimulated by hydraulic fracture treatment (Holditch, 2006). The amount of natural gas that may be potentially produced can only be estimated based on production rates from nearby wells and adjacent fields. Reserves have been estimated to approach 2 billion cubic feet (bcf) of natural gas per well (Vargas and Davis, 2006).

Casing programs have been designed to specifically prevent hydrocarbon migration from gas-producing strata penetrated by the wellbore during drilling, initial production and after completion of the well. Identification of potential fresh water-bearing zones, aquifers, gas-producing zones, and over- and under-pressured zones is 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. If one of these identified zones is encountered during drilling, cement volumes will be adjusted to isolate that zone. This is designed to prevent accidental contamination or leakage of hydrocarbons or fracturing fluids into other productive zones within the wellbore.

#### *No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. Therefore, none of the project components described above would be implemented, and potential negative impacts to the geologic formations would not occur.

### **3.6 Invasive Non-Native Plants**

#### Affected Environment

A weed survey was conducted for the project area by WestWater Engineering in 2010. During that survey, jointed goatgrass (*Aegilops cylindrica*) was observed along CR 312 adjacent to the proposed 15A Pad location. This non-native annual grass is listed as a noxious weed in Colorado (Colorado Department of Agriculture 2009). No other noxious weeds were found on the proposed pad location, but other weeds were observed adjacent to the proposed pad site. These include two other invasive non-native annual grasses—bulbous bluegrass (*Poa bulbosa*) and, less commonly, cheatgrass (*Anisantha tectorum*)—as well as a weedy non-native annual forb, clasping pepperweed (*Lepidium perfoliatum*).

Weeds near the proposed 15A Pad included three non-native forbs that commonly invade disturbed or degraded lands: kochia (*Bassia scoparia*), tall tumble mustard (*Sisymbrium altissimum*), field bindweed (*Convolvulus arvensis*), and prostrate knotweed (*Polygonum aviculare*).

The riparian area close to the proposed pipeline alignment serving the 15A well pad contained common riparian weeds, including five non-native forbs State-listed as noxious weeds in Colorado. These were common burdock (*Arctium minus*), houndstongue (*Cynoglossum officinale*), Canada thistle (*Cirsium arvense*), bull thistle (*C. vulgare*), and musk thistle (*Carduus nutans*).

Weed infestations were relatively light in the Jolley Mesa area where the Section 21 and 22 well pads would be located, although more prominent on the BLM parcel than adjacent private land, owing to weed control measures implemented by the Jolley family. Noxious weeds in this area included Scotch thistle (*Onopordum acanthium*) in addition to Canada thistle, bull thistle, musk thistle, field bindweed, and cheatgrass. Much of this weediness appears related to an earlier wildland fire.

### 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 within or adjacent to 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 as COAs to all authorizations for surface-disturbing activities, including construction of well pads and pipelines and construction or expansion of access roads (Appendix A).

#### *No Action Alternative*

Under the No Action Alternative, none of the proposed ground disturbance on BLM land would occur; therefore, impacts from invasive non-native species would be much less than under the Proposed Action.

## **3.7 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. Within the context of the MBTA, “migratory” birds include non-migratory “resident” species as well as true migrants, essentially encompassing virtually all native bird species. For most migrant and resident species, nesting habitat is of special importance because it is critical for supporting reproduction in terms of both nesting sites and food. In addition, 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.

Migratory bird species that are Federally listed under the Endangered Species Act of 1973, as amended, or classified by the BLM as sensitive species, are addressed under the section on Special Status Wildlife and Fish Species. The current section addresses migratory birds that may inhabit the proposed project area. Emphasizing the need to conserve declining species, the U.S. Fish and Wildlife Service (USFWS 2008) has published a list of Birds of Conservation Concern (BCC) that warrant prompt conservation attention to stabilize or increase populations or secure threatened habitats. This analysis focuses on BCC

species, on non-BCC species that are Neotropical (long-distance) migrants, and raptors—three groups highly vulnerable to habitat loss or modification on their breeding grounds.

The DMDP consists of two distinct areas: the Garfield Creek valley floor (Pad 15A) and the top of Jolley Mesa (Pads 21A, 21B, and 22A). The predominant vegetation community on lower slopes along the eastern side of the Garfield Creek valley where Pad 15A is proposed consists of a sparse woodland of pinyon-juniper woodland with an understory of native grasses and forbs and scattered xerophytic (dry-site) shrubs. The pad site lies immediately east of CR 312, which parallels Garfield Creek. The Garfield Creek riparian habitat west of CR 312 in the vicinity of the proposed 15A well pad is dominated by deciduous riparian trees and tall shrubs occurring as a narrow ribbon adjacent to the perennial stream. West of the creek in this area, the broad valley floor supports sagebrush or, in much of the area, has been converted to irrigated pastures. On the western side of the valley, steep slopes rising toward the top of Jolley Mesa support a dense woodland of tall deciduous shrubs, primarily oakbrush mixed with other mesophytic (moist-site) species.

The sites of the proposed well pads 21A, 21B, and 22A lie atop Jolley Mesa which is a nearly flat mesa that gradually slopes downward from south to north paralleling the Garfield Creek drainage. The habitat is dominated by an open pinyon-juniper woodland with an understory of native grasses and forbs and interspersed sagebrush stands. All three of the proposed well pad sites are situated within an old burn area. As a result of the fire, a variety of weedy non-native forbs and cheatgrass have invaded the native grass-forb community (see Section 3.6). An abandoned hay meadow lies to the northwest of the three pad sites (WestWater 2010).

A variety of migratory bird species occupy, or have the potential to occupy, the project area. Species on the BCC list that may be present include the pinyon jay (*Gymnorhinus cyanocephalus*), juniper titmouse (*Baeolophus griseus*), and Brewer's sparrow (*Spizella breweri*). Cassin's finch (*Carpodacus cassinii*) nests at higher elevations in montane or subalpine coniferous forests but often disperses to lower elevations following the breeding season and may remain there until the following spring. Brewer's sparrows were observed at three different locations near the Jolley pads during the survey, and one nest containing young was found. An individual juniper titmouse was observed in pinyon-juniper woodlands in the southern half of the project area.

Other species associated within pinyon-juniper habitats include residents or short-distance migrants such as the northern flicker (*Colaptes auratus*), black-billed magpie (*Pica hudsonia*), Townsend's solitaire (*Myadestes townsendi*), and blue-gray gnatcatcher (*Poliophtila caerulea*) and neotropical migrants such as the broad-tailed hummingbird (*Selasphorus platycercus*), Say's phoebe (*Sayornis saya*), gray flycatcher (*Empidonax oberholseri*), mountain bluebird (*Sialia sialis*), plumbeous vireo (*Vireo plumbeus*), black-throated gray warbler (*Dendroica nigrescens*), chipping sparrow (*Spizella passerina*), lark sparrow (*Chondestes grammacus*), and lesser goldfinch (*Carduelis psaltria*). Larger stands of sagebrush support additional species such as the western kingbird (*Tyrannus vociferans*), vesper sparrow (*Poocetes gramineus*), and western meadowlark (*Sturnella neglecta*).

Along Garfield Creek, the ribbon of deciduous trees and tall shrubs provides habitat for a variety of riparian birds, including the resident northern flicker, American crow (*Corvus brachyrhynchos*), and black-capped chickadee (*Poecile atricapillus*) and neotropical migrants such as the cordilleran flycatcher (*Empidonax difficilis*), western wood-pewee (*Contopus sordidulus*), house wren (*Troglodytes aedon*), warbling vireo (*Vireo gilvus*), Virginia's warbler (*Oreothlypis virginiae*), orange-crowned warbler (*Vermivora celata*), MacGillivray's warbler (*Oporornis tolmiei*), Bullock's oriole (*Icterus bullockii*), red-winged blackbird (*Agelaius phoeniceus*), spotted towhee (*Pipilo maculatus*), lazuli bunting (*Passerina amoena*), and song sparrow (*Melospiza melodia*). Additional species such as the black-billed magpie, American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), and Brewer's blackbird

(*Euphagus cyanocephalus*) commonly nest in riparian areas but feed in nearby open areas such as the nearby pastures, and these non-native grasslands may also provide nesting habitat for the savannah sparrow (*Passerculus sandwichensis*).

Several raptors are known to use or likely to use the project area for nesting and/or hunting. Nesting habitat is found in the pinyon-juniper woodlands and the riparian corridor. Species most likely to nest within or near the project areas include the American kestrel (*Falco sparverius*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*A. cooperi*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*B. swainsoni*), great horned owl (*Bubo virginiana*), long-eared owl (*Asio otus*), northern pygmy-owl (*Glaucidium gnoma*), and northern saw-whet owl (*Aegolius acadicus*).

Raptor surveys were conducted for the DMDP on behalf of Dejour by WestWater Engineering in both 2010 and 2011 (Figure 4) (WWE 2011). Surveys in the vicinity of the proposed 15A Pad near Garfield Creek identified the same seven nest structures in both years. In 2010, a nest barely inside the 0.25-mile raptor nest buffer, indicated as RTHA-7 on Figure 4, was active and contained at least one nestling. In 2011, that nest—located on the cross arm of a powerline pole—was inactive. It is common for raptors to use different nests within their large home ranges during different years, in part to allow the nest to be cleansed by sunlight, precipitation, and time of remains of waste or parasites. Another nest barely outside the 0.25-mile buffer, indicated on Figure 4 as GHOW-1, was inactive in 2010 but used for nesting by great horned owls in 2011. Great horned and some other owl species commonly use abandoned nests built by hawks, magpies, or crows; this nest appears to have been constructed by an accipiter hawk (Cooper's or sharp-shinned) based on size.

Surveys in the vicinity of the 21A, 21B, and 22A well pads on Jolley Mesa identified two nest structures in 2010 and three in 2011. Although not within a 0.25-mile buffer of any of the three DMDP pads in this area, the two inactive nests indicated on Figure 4 as UNHA-1 and UNHA-2 are within a 0.25-mile buffer of an existing well pad operated by another operator. The third nest, located approximately 0.22 mile southwest of the 21A Pad, appeared to have been used by a long-eared owl in 2010 but showed no sign of use in 2011. As with the great horned owl nesting near the 15A Pad (see above), long-eared owls commonly use nests constructed by hawks, magpies, or crows.

### Environmental Consequences

#### *Proposed Action*

The Proposed Action would result in the removal of an estimated 31.76 acres of vegetation due to pad, road, and pipeline construction. Where larger pinyon and juniper trees are removed and replaced with grasses and forbs, the vegetation/habitat would not function as it does in its current capacity. This would result in a loss of cover, forage, breeding and nesting habitat. The Proposed Action would further fragment habitat and reduce habitat patch size and connectivity in the area. Fragmentation could alter species composition and abundance. Species that require interior habitat could be displaced, while more common species that prefer openings or forest edges could benefit. In fragmented habitats, nest predation occurs more frequently near forest edges (Dobkin 1994). In addition, the most common avian and mammalian nest predators typically occur in higher densities around forest edges (Bider 1968). Fragmentation can also increase the risk of nest parasitism by brown-headed cowbirds (*Molothrus alter*), causing declines in local bird populations, including BCC species.

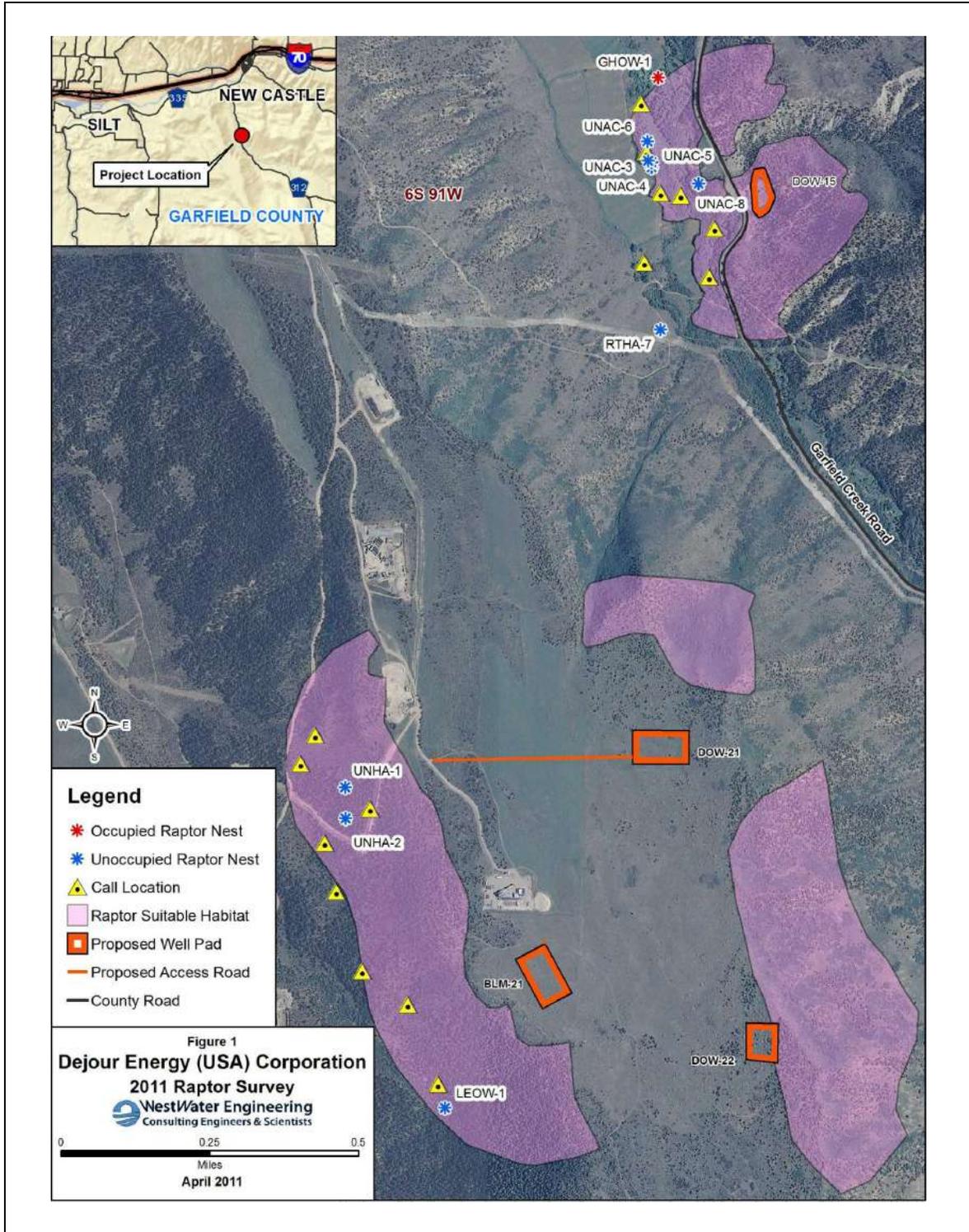


Figure 4. Results of 2011 Raptor Nest Surveys for the DMDP (WWE 2011).

Vegetation clearing conducted during the spring nesting season could result in the destruction of nests and/or eggs. Indirect take (e.g. failure due to abandonment of one or both adults) of nearby nests can also occur as a result of disturbance, although reactions vary among species. Some birds that are flushed from an area may appear relatively undisturbed, but their absence from the nest for a protracted period would leave eggs and nestlings vulnerable to overheating, chilling, predation, or (for the young) starvation. A TL to prohibit removal of vegetation during the period May 1 through June 30 would be applied as a COA under BLM's regulatory authority (see Appendix A) to protect nesting birds.

The presence of fluid-containing pits could attract migratory birds for purposes of foraging or as a source of water. The extent and nature of the problem is not well defined, but can include drowning, loss of buoyancy or insulation from contact with chemicals, or direct toxicity from ingestion or absorption through the skin. This risk would be reduced substantially by the proposed use of closed-loop drilling. In addition, any open pits containing produced water or other potentially toxic fluids would be netted to minimize bird use. See Appendix A for the COA related to this risk to migratory birds.

Operation of heavy equipment would be likely to displace birds away from preferred habitats for a short time due to noise and human presence. Displaced individuals may fail to nest due to a lack of suitable habitat that is not already occupied and may also be subject to reduced survival if the areas into which they are displaced provide less food and cover. 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 suitability for birds by reducing the distance at which courtship or territorial vocalizations by males are heard, affecting mate selection and reproductive potential.

Disturbance-related impacts described may result in a short-term decrease in the local populations of some species, particularly residents, although a loss of species viability within the overall range is not expected. Other species may be less susceptible to adverse impacts due to greater tolerance for human activity or more transitory use of the area. In contrast, impacts related to habitat loss and fragmentation would reduce the amount and quality of habitat over the long term.

Unless an exception is granted by the BLM in collaboration with CPW, lease stipulation GS-TL-01 would preclude construction, drilling, or completion activities related to either the Section 15 pad or the Section 21/22 pads during the period December 1 through April 30. Although focused on use of winter range by big game species, this TL would also provide protections to other "seasonally important" wildlife use, including nesting by raptors. In addition, the BLM would apply a 60-day raptor nesting TL as a COA to prohibit construction, drilling, or completion activities during the period May 1 through June 30 to protect nesting raptors (Appendix A). If active nests are located within 0.25 mile of a well pad, the BLM may grant an exception if, in collaboration with the USFWS, it is determined that topographic or vegetation screening or an intervening source of disturbance (e.g., a heavily traveled roadway) would be likely to avoid an adverse impact to the nest or nesting behavior.

Regardless of the results of nesting surveys and granting of exceptions by the BLM based on fulfillment of its criteria, the operator remains subject to the MBTA, administered by the USFWS, which precludes the "take" of any raptor or most other native species. 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.

### *No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. Therefore, none of the project components described above would be implemented, and no impacts to migratory birds would occur from the Proposed Action.

## **3.8 Native American Religious Concerns**

### Affected Environment

The proposed DMDP project is located within a larger area identified by the Ute Tribes as part of their ancestral homeland. Cultural resource inventories (see Section 3.3) were conducted to determine if there were any areas that might be culturally sensitive to Native Americans. No sensitive areas were identified during the inventories and none are currently known in the proposed project area.

### Environmental Consequences

#### *Proposed Action*

At present, no Native American concerns are known within the project area and none were identified during the inventories. The DMDP is located within a larger area identified by the Ute Tribes as part of their ancestral homeland. Cultural resource inventories (see Section 3.3) were conducted to determine if there were any areas that might be culturally sensitive to Native Americans. No areas were identified during the inventories and none are currently known by the CRVFO within the DMDP area. Additionally, the Ute Tribe (of the Uintah and Ouray Bands), Southern Ute, and Ute Mountain Ute Tribes were notified of the proposed DMDP on July 12, 2011. No responses, questions, or requests for additional information have been received by August 15, 2011. If new data are disclosed, new terms and conditions may have to be negotiated to accommodate their concerns.

Although the Proposed Action would have no direct impacts, increased access and personnel in the vicinity of the proposed project could indirectly impact unknown Native American resources ranging from illegal collection to vandalism.

The National Historic Preservation Act (NHPA) requires that if newly discovered cultural resources are identified during project implementation, work in that area must stop and the agency Authorized Officer notified immediately (36 CFR 800.13). The Native American Graves Protection and Repatriation Act (NAGPRA), requires that if inadvertent discovery of Native American Remains or Objects occurs, activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice made to the agency Authorized Officer, as well as the appropriate Native American group(s) (IV.C.2). Notice may be followed by a 30-day delay (NAGPRA Section 3(d)).

Further actions also require compliance under the provisions of NHPA and the Archaeological Resource Protection Act. Dejour will notify their staff and contractors of the requirement under the NHPA, that work must cease if cultural resources are found during project operations. A standard Education/Discovery COA for the protection of Native American values would be attached to the APDs (Appendix A). The importance of these COAs would be stressed to the operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered. The operator and its contractors would be made aware of the requirements under the NAGPRA.

*No Action Alternative*

Under the No Action Alternative, BLM would deny the APDs for all of the Federal wells. Consequently, none of the project components described above would be implemented. Therefore, potential impacts from increased access and the presence of project personnel would not occur and the possibility of accidental damage, vandalism, illegal collection, and excavation would not be increased.

**3.9 Noise**

Affected Environment

Noise is generally described as unwanted sound, weighted and noise intensity (or loudness) is measured as sound pressure in units of decibels (dBAs). The decibel scale is logarithmic, not linear, because the range of sound that can be detected by the human ear is so great that it is convenient to compress the scale to encompass all the sounds that need to be measured. Each 20-unit increase in the decibel scale increases the sound loudness by a factor of 10.

Sound levels have been calculated for areas that exhibit typical land uses and population densities. In rural recreational areas, ambient sound levels are expected to be approximately 30 to 40 dBA (EPA 1974, Harris 1991). As a basis for comparison, the noise level during normal conversation of two people 5 feet apart is 60 dBA.

The Proposed Action would lie within a rural setting approximately 3 miles south of I-70. Noise levels in the project area are presently created by ranching/farming operations, traffic serving the existing nearby well pads, and ongoing drilling and completion activities.

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 COGCC Rules and Regulations (Aesthetic & Noise Control Regulations). Operations involving pipeline or gas facility installation or maintenance, compressors, drilling rig, completion rig, workover rig, or fracture stimulation are subject to the maximum permissible noise levels for industrial zones. The 2006 revised COGCC noise control rules call for noise levels from oil and gas operations at any well site and/or gas facility to comply with the maximum permissible levels at a distance of 350 feet. Periodically the noise level may increase to 10 dBA above levels in Table 6 for no more than 15 minutes in a 1-hour period. 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.

<i>Zone</i>	<i>7:00 A.M. to 7:00 P.M</i>	<i>7:00 P.M. to 7:00 A.M</i>
Light Industrial	70 dBA	65 dBA
Residential/Agricultural/Rural	55 dBA	50 dBA

Short-term (7- to 14-day) increases in nearby noise levels would characterize road and well pad construction. Based on the Inverse Square Law of Noise Propagation (Harris 1991) and a typical noise level for construction sites of 65 dBA at 500 feet (Table 7), project-related noise levels would be approximately 59 dBA at a distance of 1,000 feet, approximating active commercial areas (EPA 1974).

**Table 7. Typical Noise Levels Near Construction Sites and Access Roads**

<i>Equipment</i>	<i>Noise Level (dBA)</i>		
	<i>50 feet</i>	<i>500 feet</i>	<i>1,000 feet</i>
Air Compressor, Concrete Pump	82	62	56
Backhoe	85	65	59
Bulldozer	89	69	63
Crane	88	68	62
Front End Loader	83	83	57
Heavy Truck	88	68	62
Motor Grader	85	65	59
Road Scraper	87	67	61
Tractor, Vibrator/Roller	80	60	54

Sources: BLM (1999a), La Plata County (2002)

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 dBA at 500 feet, actions associated with drilling and completion would generate approximately 62 dBA 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. The nearest residence is well more than 1,000 feet away from any proposed pad.

Traffic noise 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 7, approximately 68 dBA of noise (at 500 feet) would be created by each fuel and water truck that travels these roads. Less noise would be created by smaller trucks and passenger vehicles such as pickup trucks and sport utility vehicles. Although the duration of increased noise from this source would be short, it would occur repeatedly during the drilling and completion phases.

Noise impacts would decrease during the production phase but would remain background noise levels. During maintenance and well workover operations, noise levels would temporarily increase above those associated with routine well production. These increased noise levels would be in addition to levels of noise that are already above background levels due to current oil and gas developments in the area. Traffic noise levels would affect residences located along County Roads 311, 312, and 335, which provide primary access into the areas.

*No Action Alternative*

Under this alternative, the Federal APDs would not be approved, and noise impacts related to oil and gas development activities would not occur.

### **3.10 Prime or Unique Farmland**

#### Affected Environment

Prime or unique farmland is land that has the best combination of physical characteristics for producing food, feed, forage, fiber, and oil seed crops and is also available for these. Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops.

The Natural Resources Conservation Service (NRCS 2008) has mapped farmlands for Garfield County, Colorado. The analysis of farmlands applied here includes the system of farmlands within the DMDP area and a 0.5-mile buffer (here called the analysis area). No prime or unique farmland occurs within the DMDP area or vicinity. Other lands designated “prime if they become irrigated” are located approximately 0.3 mile from the 15A and 21B pads.

In Colorado, all agricultural lands that are irrigated, regardless of other soil characteristics, are considered "Farmlands of Statewide Importance" (e.g., mountain hay meadows). Such lands in the project area are not currently irrigated and are being used primarily for grazing. Therefore, these lands are not of statewide importance.

#### Environmental Consequences

##### *Proposed Action*

The Proposed Action would have no impact on prime or unique farmland or farmlands of statewide importance. Although some of the analysis area is mapped as “prime if they become irrigated,” the Proposed Action is not expected to result in direct or indirect adverse impacts to these areas, as the nearest location is approximately 0.3 mile away from any proposed disturbance.

##### *No Action Alternative*

The No Action Alternative would deny the Proposed Action. Therefore, impacts to prime or unique farmland from the project would not occur.

### **3.11 Range Management**

#### Affected Environment

The DMDP area would be partially in the following two allotments: Jackson Gulch (#18046) and Kamm Mesa (#08101). The Kamm Mesa allotment borders the access roads up to the proposed Section 21 and Section 22 pads, but is not directly affected by the Proposed Action. The Jackson Gulch allotment would be affected by the construction and completion of the 21A Pad and access roads. See Table 8 for allotment details.

#### Environmental Consequences

##### *Proposed Action*

Only the southwestern 80-acre parcel of public land where proposed well pad 21A is located is in the Jackson Gulch Allotment. Most of the grazing permits are small farm operations. Most permittees have cow and calf operations and are highly dependent on forage resources in the allotments as spring, summer, and fall range (BLM 2000).

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

**Table 8. Grazing Allotments within the DMDP Area**

<i>No.</i>	<i>Name</i>	<i>Acres</i>	<i>No. of Livestock</i>	<i>Livestock Type</i>	<i>Begin</i>	<i>End</i>	<i>Public Land</i>	<i>AUM</i>	<i>Affected By DMDP</i>
18046	Jackson Gulch	1,837	150	Cattle	5/16	6/14	100%	148	80 acres (Sec 21)
08101	Kamm Mesa	2,415	1,230	Cattle	5/10	6/9	0%	50	Not Affected

It is not anticipated that impacts from implementation of the Proposed Action would require adjustment of the stocking rate for livestock. 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, water lines, etc.) would be avoided during development of natural 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.

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

*No Action Alternative*

The No Action Alternative would constitute denial of the Federal APDs, and the project would not continue. As a result, no impacts to range management resources would occur.

**3.12 Realty Authorizations**

Affected Environment

Rights-of-way would be issued by the BLM for any situation in which an access or pipeline would cross a BLM parcel for the purposes of accessing a project component, other than crossing the BLM parcel within which the 21A Pad is proposed. Terms and conditions of the grants would include any of the NSO, CSU, or TL stipulations available for specific resources as identified in the current land use plan (BLM 1999b), to the extent that those resources occur or potentially occur within the particular lease parcel. Because right-of-way grants are discretionary actions, associated stipulations are not limited to those attached to any underlying Federal oil and gas lease.

Environmental Consequences

*Proposed Action*

Under the Proposed Action, the ROW authorizations would be granted subject to appropriate terms and conditions. These authorizations would provide Dejour legal access for the construction and development of the proposed pads, roads, and pipelines. Standard BLM reclamation requirements would apply.

### *No Action Alternative*

No impacts to realty authorizations would occur because all components of the Proposed Action would be denied.

### **3.13 Recreation**

#### Affected Environment

No Special Recreation Management Areas (SRMAs) are located within or adjacent to the Proposed Action (BLM 1999b). The Proposed Action is located in an area with a high potential for oil and gas development), which provides for dispersed recreation in rural to semi-primitive motorized settings on BLM lands. Recreation activities primarily consist of hunting (big and small game), camping (undeveloped), off-highway vehicle (OHV) riding, and sightseeing.

The project area is located on private, State, and Federal (BLM-administered) lands. Private landowners have seasonal hunting restrictions identified within their SUAs. Hunting activities occur on both private and BLM lands, with special restrictions on the private lands. Hunting is managed and licensed by CPW, which provides permits for both big and small game within the area. One commercial hunting outfitter—Majestic Outfitters (Cheryl Monger, 4786 County Road 312, New Castle, CO 81647)—holds a special recreation permit for guided hunting in adjacent and within the DMDP area. Most of the area covered by this permit is located between Divide Creek and Garfield Creek, and also the area east of Garfield Creek.

No developed recreational facilities such as campgrounds, picnic areas, or improved hiking/biking trails are present within the DMDP area. Several unpaved two-track roads including county roads suitable for four-wheel drive and OHVs cross the DMDP, but their use is limited primarily to hunters and hikers.

Oil and gas development activities modify the landscape and the quality of recreational settings to varying degrees. The proposed activity (gas field development) is more consistent with roaded natural (RN) settings, based on the BLM-administered lands, the Recreation Opportunity Spectrum (ROS) classification system. The RN physical and social recreation setting is typically characterized by a natural appearing environment with moderate evidence of the sights and sounds of man, where modification and use practices are evident, but harmonize with the natural environment. The recreational setting character of the proposed project area remains generally natural and primitive.

#### Environmental Consequences

##### *Proposed Action*

The Proposed Action would temporarily result in increased vehicle traffic, noise, dust, and human activity during construction. These activities would decrease throughout the operational life of the project. Well pad construction and drilling activities would likely displace wildlife in localized areas near these activities. Recreation activities, such as hunting would be displaced to other locations within or adjacent to the project area, except where SUAs call for no drilling activities during certain hunting seasons.

Over the 20- to 30-year operating life of the project, the presence of natural gas production facilities (wells, tanks, pipelines, and operations and maintenance traffic) would alter the recreational character of the project area but not enough to lose the general natural setting of the area. The recreation setting of the project area can be expected to remain within the RN category.

The use of multi-well production pads limits the extent of surface disturbance within a given area, which allows the RN settings to be retained after the project area has been developed. Both short term (construction) and long term (operations) would cause changes in the physical and social recreation setting impacting the recreation experience of traditional users. During the short term, hunters and other recreationists would be temporarily displaced, but would be able to shift their activities to surrounding public lands. Long-term impacts could potentially increase access to public lands from the newly constructed access roads and pipeline ROWs supporting the proposed project. It is recommended that BMPs (fencing and other movable barriers) be installed to limit access to previous inaccessible public lands. Without such BMPs, traditional recreational users such as hunters would be replaced by recreational users seeking different activity opportunities and experiences (e.g., OHV riders). However, recreation activities of the new users would not be outside the RN experience and activity opportunity characters. The Proposed Action is unlikely to increase public recreational access to and through the project area. Also, recreational activities would likely continue on adjacent lands by existing users.

*No Action Alternative*

Under the No Action Alternative, the Proposed Action would not be approved, and associated impacts to recreational uses or potential would not occur as a result of the project.

**3.14 Riparian and Wetland Areas**

Affected Environment

Garfield Creek is a perennial stream fed by snowmelt, runoff from rainfall, and discharge of shallow groundwater along a broad south-north trending valley that drains highlands sloping upward into heavily forested areas of the White River National Forest. As a perennial stream that flows to the Colorado River, Garfield Creek and adjacent wetlands are Waters of the U.S. that fall within the jurisdiction of the U.S. Army Corps of Engineers (USACE) under the authority of the Clean Water Act. As Waters of the U.S., any discharge of dredged or fill material into the creek and wetlands would require a permit from the USACE pursuant to Section 404 of the Clean Water Act. Depending on the type and scale of impacts, the USACE may require an Individual Permit or authorize the action under an existing Nationwide Permit. Either type of impact would require minimization and mitigation, depending on the specific situation.

Although occupying a relatively broad valley floor, the Garfield Creek channel is narrow (typically less than 10 feet wide) and relatively straight. It is somewhat incised along much of its length, with most riparian vegetation located on streambanks 1 to 3 feet higher than the channel. The stream substrate is mostly of coarse gravels to cobbles, with some areas of woody detritus and localized areas of fine sediments in depositional areas with slow flow. Riffles and shallow runs dominate, interspersed with small pool areas. Water quality appears good, with cool temperatures and low levels of suspended sediments except during high runoff events during snowmelt or following intense thunderstorms.

The habitat would be classified as riverine with an unconsolidated bottom and with banks grading abruptly to forested wetland and upland. No significant areas of emergent wetland plants are present along the stream, with only minor patches of broadleaf cattail (*Typha latifolia*) in slow-flow areas. Cattail is considered an obligate (OBL) wetland indicator, meaning that it occurs almost always (>99%) in wetlands. Overbank flow areas are scarce, indicating that the stream seldom exceeds the capacity of its banks despite a highly seasonally variable flow regime.

Within the forested wetland, dominant vegetation is a deciduous woodland/shrubland variously dominated by boxelder (*Negundo aceroides*) or sandbar willow (*Salix exigua*) with lesser amounts of narrowleaf cottonwood (*Populus angustifolia*). Sandbar willow, classified as OBL, is dominant on lower

banks and minor overbank areas where soils are persistently saturated. Boxelder is considered a facultative wet (FACW) indicator species, usually (67% to 99%) occurring in wetlands, while cottonwood is considered only facultative plus (FAC+) that occurs about equally in wetland and nonwetlands conditions. In this regard, “wetland conditions” refers primarily to the frequency and duration of inundation or saturation to the surface and to the presence of soils characteristics of persistently moist or wet conditions.

Associated tall shrubs consist primarily of chokecherry (*Padus virginiana* ssp. *melanocarpa*), Gambel’s oak (*Quercus gambelii*), and Saskatoon serviceberry (*Amelanchier alnifolia*) in areas from more to less soil moisture, respectively. Of these three species, chokecherry is considered facultative upland (FACU), usually not (1% to 33%) occurring in wetlands. The other two species—oak and serviceberry—are upland species that exploit the seasonally moist soil on higher banks or farther from the channel.

Less common along Garfield Creek are various other shrubs found along streams in the region. These include the tall species river hawthorn (*Crataegus rivularis*), western river birch (*Betula fontinalis*), and thinleaf alder (*Alnus incana*) and the low shrubs golden currant (*Ribes aureum*), gooseberry (*R. inerme*), and Woods’ rose (*Rosa woodsii*). The hawthorn is a FAC species, while the birch and alder are FACW. In general, the project vicinity is near the lower elevational limit of the birch and alder and the upper elevational limit of the hawthorn. Of the three understory shrubs, golden currant is FACW, gooseberry FAC+, and Woods’ rose FAC-.

The herbaceous stratum in the riparian woodland/shrubland is dominated by non-native mesophytic grasses widely planted in irrigated pastures, including redtop (*Agrostis* cf. *gigantea*), orchardgrass (*Dactylis glomerata*), smooth brome (*Bromopsis inermis*), common timothy (*Phleum pratense*), and Kentucky bluegrass. Redtop is FACW, timothy and Kentucky bluegrass are FACU, and smooth brome and orchardgrass are non-indicators. Native graminoids present in small wetland areas along slow-flowing reaches outside the project area include tall mannagrass (*Glyceria elata*) and water foxtail (*Alopecurus aequalis*), both OBL species. Riparian forbs not well developed beneath the dense canopy of trees and tall shrubs in the project area. Species present include wild licorice (*Glycyrrhiza lepidota*), curly dock (*Rumex crispus*), and goldenrod (*Solidago* sp.). These species are rated FAC-, FACW, and FACU, respectively. Weedy species include two invasive non-natives typical of such habitats throughout the region—houndstongue, and burdock—in addition to various non-native thistles (see Section 3.6).

Riparian woodlands and tall shrublands typically support a rich and abundant community of both resident and migratory small birds owing to the structural and composition diversity of the habitat. See Section for a summary of migratory birds known or expected to occur along Garfield Creek.

### Environmental Consequences

#### *Proposed Action*

No direct disturbance to Garfield Creek and the associated riparian and wetland corridor is planned or expected. However, Dejour is proposing to bore a pipeline beneath the creek to connect from the 15A Pad to convey natural gas to a tie-in with an existing gas gathering pipeline. The proposed alignment would cross beneath the creek at a depth designed to ensure that the pipeline is not subject to exposure and rupture as a result of stream scour. The entry and exit points of the pipeline bore would be outside the riparian habitat on both sides of the creek to prevent direct impacts to the riparian ecosystem. Due to its proximity to the proposed 15A Pad and pipeline bore points to Garfield Creek, the project will be managed to protect the creek, wetlands, and riparian corridor. Standard and site-specific COAs would be applied to this activity Appendix A. The BLM will not authorize construction and development of the 15A Pad until a construction design has been submitted and approved (Appendix A).

Improperly designed and improperly installed culverts could result in soil degradation, including erosion at culvert outlets. However, standard and site-specific surface-use COAs listed in Appendix A would be implemented to protect Garfield Creek. In addition, De Jour would monitor Garfield Creek for chemical, physical, and biological impacts.

Any upgrades to culverts or pipeline crossings of Garfield Creek within the project would be authorized by the USACE. A COA listed in Appendix A required 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.

Analysis on Public Land Health Standard 2 for Riparian Areas

No analysis of this land health standard was conducted because the area of the proposed 15A Pad near Garfield Creek is located entirely on non-BLM lands.

*No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action and any of the associated pad, road, and pipeline construction. Therefore, impacts to Waters of the U.S. would not occur.

**3.15 Socio-Economics**

Affected Environment

The DMDP project area is located entirely within Garfield County, Colorado. The total county land area is 2,947 square miles (City Data 2011). The county seat is in Glenwood Springs; other towns include Carbondale, New Castle, Silt, Rifle, Parachute, and Battlement Mesa. Highway I-70 transects the county from east to west. A network of county and private roads services the project area.

The population of the county grew by an average of approximately 3% per year from 2000 to 2010, resulting in a total increase of more than 27% from 44,259 to 56,298 residents (USDOC 2011). Population growth in Garfield County is expected to more than double over the ensuing 20 years to 119,979 in 2030 (DOLA 2010). Currently the population density is 10 people per square mile, which is low compared to the U.S. average. The county population in July 2009 was approximately 70% urban and 30% rural (City Data 2011). In 2009, Garfield County had an estimated 32,692 jobs. Industry groups with the highest percentage of total employment were construction (15%), tourism (14%), retail trade (13%), and education and health (8%) (Table 9).

<b>Table 9. Selected Job Sectors for Garfield County</b>		
<i>Job Sector</i>	<i>No. of Jobs</i>	<i>Percent of Total</i>
Agriculture	644	2.0
Mining	1,956	6.0
Oil and Gas Extraction	531	1.6
Construction	5,029	15.4
Retail Trade (retail & wholesale)	4,444	13.6
Tourism	4,692	14.3
Education and Health	2,797	8.5
Government	5,035	15.4

Employment in agriculture, forestry, hunting, and mining accounted for 8% of the total employment. Jobs in the oil and gas extraction industry numbered 531 (Colorado Department of Labor and Employment 2010). This number, representing 1.6% of total jobs, 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 4,000 persons were directly employed by gas development companies and their subcontractors in Garfield County. The number of natural gas related jobs is projected to peak at 5,278 in 2017 (Garfield County 2007).

Personal income in Garfield County has also risen, growing approximately 6% per year from \$1.3 billion in 2000 to \$2.1 billion in 2009. Annual per capita income has grown in the same period approximately 3% per year, from \$29,080 to \$37,099 (USDOC 2011). The communities of Parachute, Silt, and Rifle are considered to have the most affordable housing, while the communities of Battlement Mesa, New Castle, and Glenwood Springs are considered to have the least affordable housing, where the cost to rent or own similar housing may be 50% or more higher (BLM 2006).

In 2009, industry groups in Garfield County with the highest percentage of total employment were Construction 15%, Tourism 12%, Retail Trade 13%, and Education and Health 20% (Colorado Department of Labor and Employment 2010). An estimated 13.3% of the population was retired in the year 2000 and did not earn wages (Garfield County 2000). Employment in agriculture, forestry, hunting, and mining accounted for 8% of total employment (Colorado Department of Labor and Employment 2010).

Activities on public land in the vicinity of the project 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 alone have been estimated to be as much as \$1 million annually, with perhaps an additional \$1 million annually of indirect and local expenditures (CPW 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). Production of natural gas in Garfield County increased dramatically during recent years, from approximately 70 billion cubic feet (BCF) in 2000 to 576 BCF in 2009 (COGCC 2010). In addition, Garfield County is experiencing the fastest increase in oil and gas development in Colorado, with over 2,000 drilling permits currently approved between July 2009 and September 2010 (COGCC 2010). 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 4,000 persons were directly employed by gas development companies and their subcontractors in Garfield County (Garfield County 2009).

Property tax revenue from oil and gas development has become the largest source of public revenue in Garfield County (BLM 2006). In the year 2009, oil and gas assessed valuation in the County amounted to approximately \$3.8 billion, or about 74% of the total assessed value (Garfield County 2011b). Due to the economic downturn, the 2010 oil and gas revenues and assessed valuation dropped drastically. Oil and gas assessed valuation amounted to \$2.0 billion, or about 60% of the total assessed value. In 2010, total tax revenues from all districts was approximately \$153 million. Tax dollar distributions in 2010 were Schools 34.6%, County 30.4%, Special Districts 12.3%, Fire Districts 12.0%, Colleges 8.2%, and Towns 2.5%.

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 Hispanic/Latino community is the only minority population of note in the vicinity of the project area. In 2010, approximately 28% of the residents of Garfield County identified themselves as Hispanic/Latino, compared to 17% in 2000. Statewide, the percentage of Hispanic/Latino residents grew from 17% to 21% during the same 10-year period. African-American, American Indian, Asian, and Pacific Islander residents accounted for a combined 2.6% of the Garfield County population in 2010, compared to a statewide level of 8% (Garfield County 2010).

The predominant revenue source for Garfield County is property tax, which makes up approximately half of the County’s total revenue. Growth in this revenue source is primarily driven by the oil and gas industry (Garfield County 2011a). Oil and gas related property tax revenue makes up more than two-thirds of the County’s total property tax revenue, and more than two-thirds of this oil and gas related property tax is directly associated with production. Total revenues for Garfield County in 2009 amounted to more than \$135 million. Garfield County property tax is utilized as the primary revenue source for the General Fund, Capital Expenditures Fund, Road and Bridge Fund, Retirement fund, and Human Services Fund. Together these funds comprise 77% of the budget.

The Federal government makes Payments in Lieu of Taxes (PILT) to County governments to help offset property tax revenue lost on non-taxable Federal lands located within County boundaries (BLM 2006). The PILT distributions are based on acres for all Federal land management agencies (e.g., approximately 1.9 million acres in Garfield County). The amount may also be adjusted based on population and as apportioned by Congress. By formula, payments are decreased as other Federal funds, such as mineral royalty payments, increase. PILT amounts to Garfield County in the last 5 years are shown in Table 10 (USDI NBC 2011).

<i>Year</i>	<i>PILT Amounts</i>
2011	\$391,032
2010	\$391,649
2009	\$1,808,984
2008	\$654,453
2007	\$1,078,087

In addition to PILT distributions, BLM shares revenue generated by commercial activities on public lands with State and County governments (BLM 2006). Federal mineral royalties (FMLs) are collected on oil and gas production from Federal mineral leases. Oil and gas lessees pay royalties equal to 12.5% of the well head value of oil and gas produced from public lands. Half of the royalty receipts are distributed to Colorado. In 2008 and 2009 Garfield County received FML and Severance Direct Distribution Payments totaling \$2,744,802 and \$11,400,046 respectively (AGNC 2011). These funds are then allocated to fund County services, schools, and local communities.

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 project area. In 2010, 28.3% of the residents of Garfield County

identified themselves as Hispanic or Latino, and this is slightly higher than for Colorado (20.7%). African Americans, American Indians, and Pacific Islanders account for less than 2% of the Garfield County population, which are below state levels (DOLA 2010).

### Environmental Consequences

#### *Proposed Action*

The Proposed Action would have positively impact the local economies of Garfield County through the creation and retention of job opportunities in the oil and gas industry, as well as in supporting local 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 hunting guides may result from the potential displacement of big game and the resulting reduction in big game hunting within the project area.

The Proposed Action could result in minor negative social impacts, including a decrease in the recreational character of the area, reduced scenic quality, increased dust levels, and increased traffic. However, most of these impacts would be minor and limited to the relatively short duration of the well drilling and completion activities.

#### *No Action Alternative*

All of the project acreage is held under Federal leases. Therefore, under the No Action Alternative there would be no Federal mineral royalty payments and consequently local governments would not realize any benefit from royalties and PILT for this property.

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

#### Affected Environment

Soils within the DMDP area have formed in several types of surficial materials (Soule and Stover 1985):

- Residual material produced by in-situ weathering of the underlying sedimentary bedrock, which is primarily shale.
- Colluvium and mass wasting deposits including landslides, debris flows, and slumps.
- Aeolian (wind) deposits of sand and silt.
- Alluvial deposits including alluvial fan gravels and floodplain alluvium in stream valleys.

Lack of moisture associated with the semi-arid climate has suppressed vegetation growth and slowed the chemical and biological processes commonly associated with soil development (BLM 1994). In addition, soil fertility is hampered by high salinity and susceptibility to wind and water erosion. Soils in the project area support low-density livestock grazing and wildlife habitat, but generally have a poor revegetation potential due to these limiting factors. However, soils in alluvial valleys and some gently sloping mesa summits are capable of supporting irrigated and dryland crops, principally hay and alfalfa.

The DMDP area is located along the mainstem and ephemeral drainages of Garfield Creek at elevations between 5,500 and 7,000 feet elevation. The proposed project is covered by the *Soil Survey of Rifle Area, Colorado* (USDA 1985). According to this survey, the project area contains five soil types. Table 11 lists the soil mapping units within the DMDP area and indicates the environmental and construction-

related constraints associated with each soil type. The total acreage of each mapping unit that would be affected by well pads, pipelines, and new access roads is also presented.

Soils with a severe or very severe water erosion hazard tend to be found on moderately to steeply sloping lands. These soils also tend to be relatively impermeable, meaning that more precipitation tends to run off the surface rather than infiltrate into the soil. Other important soil characteristics that make a soil highly erodible by water include high contents of silt and very fine sand; expansive types of clay; a tendency to form surface crusts; the presence of impervious soil layers; and blocky, platy, or massive soil structure (Brady and Weil 2002).

<b>Table 11. Project Area Soils</b>				
<i>Mapping Unit Name and Number; Percent Slope</i>	<i>Description</i>	<i>Erosion Hazard</i>	<i>Suitability</i>	<i>Proposed Infrastructure Type</i>
Morval Loam (44) 3-12%	Deep, well drained gently sloping to rolling soil on mesas and sides of valleys from 6,500 to 8,000 feet. This soil is formed in alluvium derived from basalt and sandstone. This soil has moderate permeability and is generally used for grazing and flood irrigated.	Slight	VIe: Construction limitations due to shrink swell potential and low strength	21A Pad, access road, and pipeline
Morval-Tridell complex (45) 6-25%	Moderately sloping to hilly soils on alluvial fans and sides of mesas at elevations ranging from 6,500 to 8,000 feet. 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. This soil has moderately rapid permeability and is generally used for grazing.	Moderate	VIe: Construction limitations due to shrink swell potential, frost action and large stones	21B and 22A Pads, access roads, and pipelines
Torrifluvents(65) 0-6%	Deep, well drained to somewhat poorly drained soils formed in alluvium on nearly level soils on floodplains of the Colorado River. The groundwater is 2to 4 feet deep, and the soil is seasonally prone to flooding from high water table. The soils are used for wildlife habitat, recreation and grazing.	Moderate	VIIw: Construction limitations due to seasonal flooding and saturated soils.	15A Pad, access road, and pipelines
Torriorthents-Rock outcrop complex 15-70%	Shallow to moderately deep exposed sandstone and shale bedrock and stony soils and outcrops. Torriorthents are generally clayey to loamy, contain gravel, cobbles, and stones, and are located on foothills and mountainsides below the rock outcrop. This complex is generally used for limited grazing, wildlife habitat and recreation.	Moderate to Severe	VIIe: Very Severe Construction limitation due to rock outcrops, steep slopes and stoniness	15A Pad

Soils with slow to very slow permeability are susceptible to ponding of water at the surface. A low available water capacity can be an impediment to revegetation. Soils within the DMDP area are not subject to flooding or high water tables.

While it is unlikely within the DMDP area, trenching for pipeline or road construction in areas where soils average less than 60 inches to bedrock, and on mesa tops, may encounter bedrock or boulders that require blasting.

### Environmental Consequences

#### *Proposed Action*

The Proposed Action would involve surface disturbance for access roads, four well pads, and pipelines, resulting in 26.62 acres of short-term vegetation loss and soil compaction and displacement, with a long-term loss of 16.77 acres. In general, the area that would be affected by the Proposed Action contains adequate vegetation buffers and moderate slopes that would reduce the potential for sediment transport to Garfield Creek and Colorado River. The DMDP does include a few areas on the access roads and on the 15A Pad that are susceptible to erosion, such as erosive soils and steep slopes. In areas susceptible to erosion or possible slope instability issues, construction techniques (retaining structures, full-bench cut, no side-casting, etc.), proper erosion control and geotechnical analysis and design may be required. No areas that are subject to flooding or high water tables would be affected by the project.

In addition, construction activities would cause mixing of soil horizons, slight to moderate increases in local soil loss, loss of soil productivity, and sediment available for transport to surface waters. Noxious weed infestation resulting from disturbance would impact soil productivity. 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.

Throughout the affected area, the potential would also exist for accidental spills or leaks of petroleum products and hazardous materials during construction, drilling activities and long term operations for the life of the wells. These events would cause soil contamination and may decrease the soil fertility and revegetation potential.

#### *No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action, and any of the associated pad, road, and pipeline construction. No new surface disturbance on private land would occur under the No Action Alternative, thus eliminating impacts to soils from this development.

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

A formal Land Health Assessment (LHA) was completed in 2009 in the area of the Proposed Action and published as the “Divide Creek Land Health Assessment” in 2010 (BLM 2009). Standard 1 for Upland Soils is currently being met at all sites. With successful topsoil handling procedures, erosion control methods, and restoration measures during construction and restoration activities, the Proposed Action would not prevent the area from meeting Standard 1.

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

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

#### Affected Environment

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 the project area:

Parachute penstemon (*Penstemon debilis*), DeBeque phacelia (*Phacelia submutica*), and Colorado hookless cactus (*Sclerocactus glaucus*).

#### Environmental Consequences

##### *Proposed Action*

Plant surveys were conducted in 2010. Because no suitable habitat exists for any Federally listed, proposed, or candidate plant species in the project area, the project would have “**No Effect**” on these species.

##### *No Action Alternative*

The No Action Alternative would constitute denial of the project, resulting in no adverse impacts to these species or potential habitat.

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

#### Affected Environment

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 its 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 in also feed on other species such as the mountain cottontail (*Sylvilagus nuttallii*), pine squirrel (*Tamiasciurus hudsonicus*), and dusky grouse (*Dendragapus obscurus*).

The 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 CRVFO. 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 CRVFO 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 project area does not border the Battlement Creek LAU and therefore is not considered further in this document.

Mexican Spotted Owl (*Strix occidentalis*). Federally listed as threatened. 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. Because no known occurrences or suitable habitats are present in the project vicinity, this species is not considered further.

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. The nearest known habitat for the humpback chub and bonytail is within the Colorado River approximately 90 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 CRVFO and WRNF areas is apparently the result of human intervention (e.g., sanctioned or *ad hoc* translocation 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.

### Environmental Consequences

#### *Proposed Action*

The Canada lynx, Mexican spotted owl, and western yellow-billed cuckoo are not expected to occur in the project vicinity based on habitat types present and documented occurrences. Therefore, the Proposed Action would have “**No Effect**” on these species.

The endangered Colorado River fishes could potentially be affected by the consumptive use of water taken from the Colorado River basin to support activities associated with the Proposed Action. Depletions in flows in the Colorado River and major tributaries are a major source of impacts to these fishes due to changes in the flow regime that reduce the availability and suitability of spawning sites and habitats needed for survival and growth of the larvae. Principal sources of depletion in the Colorado River basin include withdrawals for agricultural or industrial uses, withdrawals for municipal water supplies, and evaporative losses from reservoirs. On average, approximately 0.7 acre-feet of Colorado River water is consumed during activities related to each oil and gas well.

In 2008, the 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 this 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, Likely to Adversely Affect**” the Colorado pikeminnow, humpback chub, bonytail chub, or razorback sucker as a result of depletions associated with oil and gas projects. To offset the impacts, the BLM has set up a Recovery Agreement, which includes a one-time fee per well. The estimated depletions from the Proposed Action will be added to the CRVFO tracking log and submitted to the USFWS per the

PBA/PBO at the end of the year to account for depletions associated with BLM's fluid mineral program. The calculated mitigation fees are used by the USFWS for mitigation projects and contribute to the recovery of these endangered species through restoration of habitat, propagation, and genetics management, instream flow identification and protection, program management, non-native fish management, research, and monitoring, and public education.

Other potential impacts to these species include inflow of sediments from areas of surface disturbance and inflow of chemical pollutants related to oil and gas activities on the well pads, associated with ancillary surface facilities, or resulting from an accident involving a haul truck in proximity to a stream. Stormwater controls required for the protection of surface water quality would also provide protection of aquatic organisms (see COAs in Appendix A). Even if sediment inflow were to occur, including incidental aerial deposition of fugitive dust from roadways and construction areas, these fishes are adapted to the naturally high sediment loads that characterize the Colorado River and its tributaries.

The inflow of chemical pollutants could impact the endangered big-river fishes if concentrations were sufficient to cause acute effects. The potential for adverse impacts would be limited to the Colorado pikeminnow and razorback sucker, the two species known to occur within the CRVFO area. Spills or other releases of chemical pollutants as a result of oil and gas activities are infrequent in the CRVFO area due to the various design requirements imposed by BLM and the State of Colorado. In the event of a spill or accidental release, the operator is required to implement its Spill Prevention, Control, and Countermeasures (SPCC) plan, including such cleanup and mitigation measures as required by BLM or the State. In addition, stormwater controls (Appendix A) would reduce the risk of transport of these substances as well as sediments to surface waters, including the Colorado River. For these reasons, and because any spills making their way into the Colorado River would be rapidly diluted to levels below that are not deleterious, or even detectable, the potential for adverse impacts from chemical releases is not considered significant. Consequently, the Proposed Action would have "**No Effect**" on the endangered big-river fishes from potential impacts to water quality.

#### *No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action; therefore none of the project components described above would be implemented. Thus there would be no impacts to Federally Listed, Proposed, or Candidate animal species from this Proposed Action.

### ***3.17.3 BLM Sensitive Plant Species***

#### Affected Environment

BLM sensitive plant species with habitat and/or occurrence records in the project area include Roan Cliffs blazing star (*Mentzelia rhizomata*), Harrington's beardtongue (*Penstemon harringtonii*), and Cathedral Bluffs meadow-rue (*Thalictrum heliophilum*).

#### Environmental Consequences

##### *Proposed Action*

The results of an October 2010 plant inventory indicate the only BLM sensitive plant species likely to occur in the DMDP area is Harrington's beardtongue. Potential habitat for Harrington's beardtongue was surveyed on foot in July 2010. The results of this survey did not result in the location of any BLM sensitive plants or suitable habitat (WestWater 2010).

*No Action Alternative*

Under the No Action Alternative, the Proposed Action would be denied and none of the proposed surface-disturbing activities or direct and indirect impacts related to oil and gas development and production activities would occur. Therefore, this alternative would not result in project-related impacts to Harrington’s beardtongue or other BLM sensitive plant species.

**3.17.4 BLM Sensitive Animal Species**

Affected Environment

BLM sensitive animal species with suitable habitat and/or occurrence records in the portion of the CRVFO that includes the project area and vicinity are listed in Table 12.

<b>Table 12. Special Status Vertebrate Species Present or Potentially Present in the Project Area</b>		
<i>Common Name</i>	<i>Habitat</i>	<i>Potential for Occurrence</i>
Fringed myotis, Townsend’s big-eared bat	Breed and roost in caves, trees, mines, and buildings; hunt over pinyon-juniper, montane conifers, and semi-desert shrubs.	Possible
Northern goshawk	Predominantly uses spruce/fir forests but also use Douglas-fir, various pines, and aspens.	Possible
Bald eagle	Nests and roosts in mature cottonwood forests along rivers, large streams, and lakes.	Present along Colorado River
Brewer’s sparrow	Sagebrush shrublands, typically more extensive stands than in the project area.	Possible
Midget faded rattlesnake	Cold desert dominated by sagebrush and with an abundance of rock outcrops and exposed canyon walls, typically farther west than the project area.	Unlikely – No suitable habitat
Great Basin spadefoot	Habitat includes pinyon-juniper woodlands and semi-desert shrublands, typically farther west than the project area.	Unlikely – No suitable habitat
Northern leopard frog	Wet meadows and the shallows of marshes, ponds, lakes, streams, and irrigation ditches.	Present in Garfield Creek
Flannelmouth sucker and roundtail chub	Flannelmouth sucker and roundtail chub generally restricted to rivers and major tributaries. No habitat for these species within the project vicinity.	Present in Colorado River and Divide Creek
Bluehead sucker	Found in smaller streams with a rock substrate and mid to fast flowing waters.	Present in Divide Creek
Colorado River cutthroat trout	Headwaters streams and ponds with cool, clear waters and no non-native cutthroat subspecies	Not found during electrofishing surveys

Environmental Consequences

*Proposed Action*

For the sensitive species listed in Table 12, 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 part of the project area are expected to result in no or negligible adverse impacts. The bases for this determination relative to the species present or potentially present are summarized below.

Fringed Myotis (*Myotis thysanodes* and Townsend's Big-eared Bat (*Corynorhinus townsendii*) – No caves or other suitable roosting sites occur in the project area. Loss of large trees, potentially also used for roosting, would be negligible. No new loss of habitat above which the bats could search for aerial prey would occur, and the area they might avoid during nighttime drilling and completion activities would represent a small portion of their total feeding range, if present.

Northern Goshawk (*Accipiter gentilis*) – This species is mostly limited to spruce/fir or aspen forests, such as atop the Roan Plateau, Battlement Mesa, and other areas that reach subalpine elevations. However, goshawks may migrate to lower elevation pinyon/juniper or Douglas-fir habitats during winter and therefore could make occasional, transitory use of the project area for winter foraging. Goshawks feed primarily on small birds but also on diurnal small mammals (rabbits, chipmunks, etc.).

Brewer's Sparrow (*Spizella breweri*) – This project vicinity contains limited and marginal habitat for the Brewer's sparrow, which generally is restricted to extensive, uniform stands of sagebrush, primarily sagebrush steppe. If the species were to occur, oil and gas activities occurring within the home range of a nesting pair could cause individuals to shift their feeding patterns and to locate their nests to avoid the disturbance (noise, dust, human activity). However, this impact would be limited to the nesting season and would not be an issue for long-term production and maintenance operations.

Northern Leopard Frog (*Rana pipiens*) – The northern leopard frog is limited to perennial waters, including ponds and slow-flowing perennial streams or persistent portions of intermittent streams with good water quality and abundant aquatic or shoreline vegetation. The species occurs in Garfield Creek upstream from the site and in other streams in the general vicinity. However, because the project would not involve habitat disturbance of suitable water sources, impacts to this species are not expected.

Flannelmouth Sucker (*Catostomus latipinnis*), Bluehead Sucker (*C. discobolus*), and Roundtail Chub (*Gila robusta*) – Similar to the endangered Colorado River fishes described previously, these species are vulnerable to alterations in flow regimes that affect the availability and suitability of spawning sites and habitats needed for development of the larvae. The amount of consumptive water use associated with the Proposed Action would not be expected to cause discernible impacts to flows in the Colorado River or Divide Creek. Also similar to the endangered big-river fishes, these BLM sensitive species are adapted to naturally high sediment loads and therefore would not be affected by increased sediment transport. However, these species are vulnerable to inflow of sediments into smaller streams by smothering the eggs of these species.

The potential for adverse impacts from inflow of chemical pollutants is also greater in small streams due less dilution and the presence of larval or juvenile fishes, which are more susceptible to mortality from acute toxicity. The COAs for the protection of water quality (Appendix A) would minimize the potential for impacts from inflow of sediments or toxicants. Prompt implementation of the SPCC plan following any spill or other release of hydrocarbons, saline waters, or other contaminants would further reduce the risk of significant adverse impacts to these species and other aquatic life in affected waters.

#### *No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. Therefore, adverse impacts to these species would not occur.

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

According to the Divide Creek LHA (BLM 2009), qualitative information suggests all sites with potential special status species habitat were found to be in good condition, providing healthy and productive

habitat. Based on the overall condition of upland and riparian habitats located on public lands, suitable habitat is available for BLM sensitive plant and terrestrial wildlife species within the Divide Creek LHA. Thus, Standard 4 for BLM sensitive terrestrial wildlife species is being met within the Divide Creek watershed. 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 special status species 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 species and their habitats would be achieved, but populations could be at risk with increasing natural gas development.

*No Action*

The No Action Alternative would not result in a failure of the area to achieve Standard 4 because the proposed developments would not occur.

**3.18 Vegetation (includes and Analysis on Public Land Health Standard 3)**

Affected Environment

Predominant plant communities in the DMDP area are as follows:

Pad 15A – The sideslope along the eastern side of the Garfield Creek valley in the project area supports an open woodland of Utah juniper (*Juniperus utahensis*) and pinyon pine (*Pinus edulis*) with an understory of scattered upland shrubs, including mountain-mahogany (*Cercocarpus montanus*), skunkbrush sumac (*Rhus trilobata*), and roundleaf snowberry (*Symphoricarpos rotundifolius*), with bitterbrush (*Purshia tridentata*) a minor component. Along the xeric transition at the toe of the slope and upper edges of the valley floor, including the pad site, these species are generally replaced by big sagebrush (*Artemisia tridentata*), rubber rabbitbrush (*Chrysothamnus nauseosus*), and fourwing saltbush (*Atriplex canescens*). Prevalent herbs in the pad site include native slender wheatgrass (*Elymus trachycaulus*), western wheatgrass (*Pascopyrum smithii*), the native bluegrass *Poa secunda*, and needle-and-thread (*Hesperostipa comata*, intermediate wheatgrass (along with the non-native pasture grasses crested wheatgrass (*Agropyron cristatum*) and, less commonly, intermediate wheatgrass (*Thinopyrum intermedium*). Native forbs include wild-buckwheat (*Eriogonum* sp.), curlycup gumweed (*Grindelia squarrosa*), purple tansy-aster (*Machaeranthera bigelovii*), and hairy golden-aster (*Heterotheca villosa*). During spring, the prostrate umbels *Cymopterus* sp. and *Lomatium* sp. were common on the clayey soil in portions of the site closest to CR 312. Non-native forbs present include salsify (*Tragopogon* sp.), a common ruderal weed, and yellow sweetclover (*Melilotus officinalis*), probably seeded with the non-native pasture grasses.

The riparian plant community along Garfield Creek in the vicinity of the 15A Pad is described in Section 3.14 (Riparian and Wetland Areas).

Pads 21A, 21B, and 22A – The portion of Jolley Mesa where these facilities would be located represents a transitional area from densely wooded east-facing slopes along the western side of the Garfield Creek valley to grassland and pasture habitats that dominate the mesa top. In general, the area is dominated by savannah or sparse woodland of Utah juniper with lesser amounts of pinyon pine and patches of Gambel's oak. Many dead snags remain from a wildfire in 2006. The understory is primarily of grasses and forbs but includes some areas dominated by sagebrush and rabbitbrush. A subshrub that commonly proliferates following wildland fires, broom snakeweed (*Gutierrezia sarothrae*), is abundant. Common grasses include native perennials such as slender wheatgrass, western wheatgrass, native bluegrass, and bottlebrush squirreltail (*Elymus elymoides*). Also common are non-native pasture grasses such as Kentucky bluegrass and crested wheatgrass. In early spring, native forbs included sagebrush buttercup

(*Ranunculus glaberrimus*) and lambstongue ragwort (*Packera integerrimus*) in addition to the two prostrate umbels listed above for Pad 15A and scattered individuals of Easter Daisy (*Townsendia incana*). In late summer, prominent native forbs included curlycup gumweed, purple tansy-aster, and hairy golden-aster, all of which are common found in degraded grasslands and the margins of pastures in the region.

### Environmental Consequences

#### *Proposed Action*

Construction of the proposed pads, pipelines, and access roads would result in both direct and indirect impacts 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 26.62 acres of vegetation. Of this disturbance, 16.77 acres would not be reclaimed during the life of the wells. With implementation of standard COAs, 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 wellbores in the future, it is likely that vegetation would remain in an early seral stage for the life of the wells.

Although vegetation would regenerate over time, this process could take several decades, depending on the growth and persistence of seeded species and the intensity of grazing by livestock or wildlife. Pinyon-juniper woodlands could take hundreds of years to return to predisturbance conditions. This would result in an increase in the proportion of herbaceous (i.e., non-woody) species in the areas of disturbance. The success or failure of revegetation would affect other resources including soils, surface water quality, wildlife, visual resources, and livestock grazing.

#### *No Action Alternative*

Under the No Action Alternative, none of the proposed ground disturbance would occur. Therefore, vegetation would not be directly impacted.

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

A formal Land Health Assessment (LHA) was completed in 2009 in the area of the Proposed Action and published as the “Divide Creek Land Health Assessment” in 2010 (BLM 2009). Standard 3 for Plant and Animal Communities was meeting the standard, although problems were noted, including invasive weeds, inadequate litter cover, and the decline in diversity and abundance of functional groups such as cool-season perennial grasses and perennial forbs. Noxious weeds and undesirable species varied in distribution and cover throughout the Divide Creek Landscape. Due to the intensity of uses and activities occurring in the landscape, weeds are common, particularly at the lower elevations.

Surface disturbance associated with the Proposed Action has the potential to encourage expansion and dominance of the site by invasive, non-native species. Appendix A includes provisions to revegetate the disturbances with native species and to control noxious weeds. Therefore, the Proposed Action would not contribute to the failure of the area to meet Standard 3.

### 3.19 Visual Resources

#### Affected Environment

The Proposed Action would occur on public lands administered by the BLM, state lands, and private land southwest of New Castle. The Proposed Action that occurs on lands administered by the BLM encompasses areas classified as Visual Resource Management (VRM) Class II, as identified in the 1984 Glenwood Springs Resource Management Plan. The objective for VRM Class II, as defined in BLM Manual H-8410-1, Visual Resource Inventory (BLM 1986), is described below.

- The objective of VRM Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape would be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

The BLM does not apply VRM objectives to private land, although visual resource impacts are still considered and appropriate mitigation applied unless the private landowner prefers otherwise.

The visual resource analysis area for the DMDP includes the I-70 viewshed corridor south of I-70 between Silt and Garfield Creek; CR 311 (Divide Creek Road) south of Silt; CR 312 (Garfield Creek Road) southwest of New Castle; and the area on top of Jolley Mesa. Portions of the project would be located on top of Jolley Mesa and along CR 312. The visual resource inventory area is characteristic of rural agricultural/ranching land, scattered rural residences, and oil and gas development. The Proposed Action would occur in two different areas within the MDP boundary, each with a slightly different landscape character. The 21A Pad would be located on land administered by the BLM and is classified as VRM Class II. The 15A, 21B, and 22A pads would be located on State-owned lands, with their associated access roads being located on private land or via County road (Figure 5).

The topography on Jolley Mesa is flat to gently rolling and slopes gently upward toward the south. The project area is located in an area of a wildland fire in 2006. Vegetation on top is predominantly mixed shrub/sagebrush flats with patches of oakbrush and standing dead tree snags. Vegetation along the edges and slopes of the mesa is predominantly pinyon-juniper. All three pads are set back from the edge of the mesa and so not visible from the valley floors and County roads. The pinyon-juniper woodland along the mesa edge and slope would provide some screening, as most viewers would be located at a lower elevation. No public access is available to the top of Jolley Mesa. Consequently, those who would view the Section 21/22 would be the private landowners and oil and gas workers.

The 15A Pad would be located along immediately east of CR 312, making it the most visible pad. The topography is characterized by hills and ridgelines transitioning into steeper slopes to the east. This pad would sit in between two ridgelines that extend down to CR 312 from the steeper topography to the east. The vegetation is predominantly scattered pinyon-juniper woodlands intermixed with mixed sagebrush/shrubs communities. This pad would be small (3/3 acres initial disturbance) and fit to the topography relatively well, reducing the amount of cut and fill required. The adjacent topography would provide some visual screening to viewers traveling along CR 312, until they are practically on top of it. The pad and access road would be visible for a short duration of time, as the viewer would need to be in close proximity to see it.

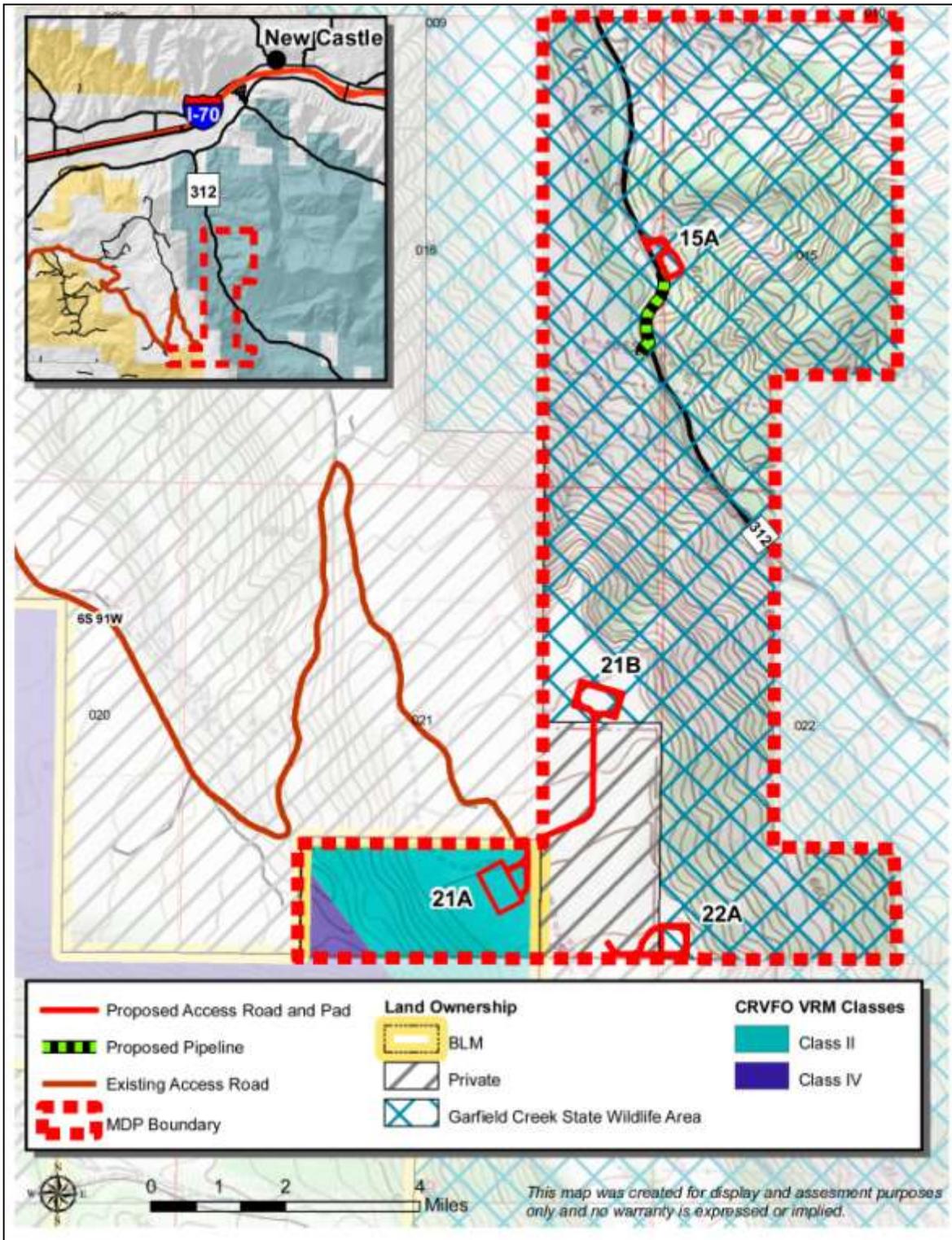


Figure 5. Visual Resource Management (VRM) Class Designations in the DMDP Area

## Environmental Consequences

### *Proposed Action*

The planning process for this project involved many site visits where layout and locations for the pads, pipeline, and access roads were reviewed. Short-term visual impacts due to pad, access road, and pipeline construction, drilling, and completion activities would occur within the project area. The existing landscape would be changed by the introduction of contrasting elements within the landscape in the form of new lines, colors, forms, and textures.

Long-term impacts of the Proposed Action would consist of an increase in the departure from the native characteristics of the visual character within the landscape where the new pads, facilities, and roads are constructed. The visibility of new areas of surface disturbance and production equipment would increase the exiting visual contrasts associated with human modification already present in the area.

The standard BMPs related to reclamation, facility paint colors, and screening the access road and pipeline alignment from view would largely mitigate long-term impacts.

- Surface facilities shall be painted Shadow Gray on the 21A, 21B, and 22A pads and Shale Green on the 15A Pad.
- All cut-and-fill slopes shall have undulating contours which emulate the slopes seen in the adjacent landscape. Constructed slopes shall meet existing grades with a similar slope to eliminate the line created at the edge where two different grades meet.
- All woody vegetation (live and dead) shall remain standing at the toe of the fill slope and at the top of the cut slope to provide visual screening. During interim reclamation, the vegetation shall be protected and remain standing and undamaged when fill material is pulled back to recontour the pad.
- In areas where clearing within dense vegetation is required, thinning and feathering of the adjacent vegetation shall be incorporated. Thinning and feathering will reduce the hard line between the new construction and the existing vegetation. Material from felled trees shall be stockpiled for dispersing over seeded areas, creating microclimates and habitats, encouraging vegetation growth, and providing small species cover.
- Access roads and pipeline corridors shall follow the natural contours so that they conform to the landscape and reduce the amount of cut and fill required to meet grade and to eliminate distant, straight line impacts.

### *No Action Alternative*

The No Action Alternative would result in no impacts to visual resources because the developments described in the Proposed Action would not occur.

## **3.20 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 & 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 U.S., 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 (CERCLA) (Public Law 96-510 of 1980) provides for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment. It also provides national, regional, and local contingency plans. Applicable emergency operations plans in place include the National Contingency Plan (40 CFR 300, required by section 105 of CERCLA), the Region VIII Regional Contingency Plan, the Colorado River Sub-Area Contingency Plan (these three are Environmental Protection Agency produced plans), the Mesa County Emergency Operations Plan (developed by the Mesa County Office of Emergency Management), and the BLM Grand Junction Field Office Hazardous Materials Contingency Plan.
- The Resource Conservation and Recovery Act (RCRA) (Public Law 94-580, October 21, 1976) regulates the use of hazardous substances and disposal of hazardous wastes. Note: While oil and gas lessees are exempt from RCRA, right-of-way holders are not. RCRA strictly regulates the management and disposal of hazardous wastes.

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

### Environmental Consequences

#### *Proposed Action*

Possible pollutants that could be released during the construction phase of this project would include diesel fuel, hydraulic fluid, and lubricants. These materials would be used during construction of the pads, roads, and pipelines, and for refueling and maintaining equipment and vehicles. Potentially harmful substances used in the construction and operation phases 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 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 result in the contamination of groundwater resources. In the case of any release, emergency or otherwise, the responsible party would be liable for cleanup and any damages. Depending on the scope of the accident, any of the above referenced contingency plans would be activated to provide emergency response. At a minimum, the BLM Grand Junction Field Office contingency plan would apply.

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

#### *No Action Alternative*

Under this alternative, no new Federal wells would be drilled, and the potential waste impacts associated with implementing the Proposed Action would not occur.

### **3.21 Water Quality, Surface and Ground**

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

##### Affected Environment

The proposed activities for the DMDP including pads, access road, and pipelines would occur entirely within Garfield Creek 6<sup>th</sup> code hydrologic unit which drains to the perennial Garfield Creek and finally empties directly into the Colorado River. Development in Section 16, including MDP 15A and pipelines, drain to Garfield Creek approximately 400 feet to the west which flows another 2 miles to the Colorado River. Development in Section 21 and 22, including MDP 21A, 21B, 22A, access roads and pipelines drain to Garfield creek approximately 0.5 mile to the northeast and another 3 miles to the Colorado River. According to the *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission [WQCC] Regulation No. 37) (CDPHE 2007), unnamed ephemeral drainages that drain most

of the project vicinity are within segment 7a, which includes the mainstem and tributaries to Garfield Creek from the boundary of White River National Forest to the confluence with the Colorado River.

- Segment 7a – This segment has been classified as aquatic life cold 1, recreation E, 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 E refers to waters with existing primary contact uses. Water supply and agriculture are as described for segment 4a.

Streams within segment 7a are not on the State of Colorado 303(d) List of Impaired Waters and Monitoring and Evaluation List (CDPHE, WQCC Regulation No. 93) (CDPHE 2010). Garfield Creek is important as a perennial waterway supporting fish and other aquatic species. No historical water quality data are available from USGS on Garfield Creek, but data have been collected for Divide Creek, a small perennial creek west of the DMDP area. Because of similar geology, hydrology, drainage basin size and elevation, adjacent natural vegetation, and adjacent land uses, Divide Creek is assumed to have water quality similar to that in Garfield Creek. Water quality data are also available for the Colorado River near Rulison, located several miles downstream of the confluence of Baldy Creek (Table 13).

<i>Parameter</i>	<i>Divide Creek near Silt CO, USGS Site #393225107372001 10/13/2003</i>	<i>Colorado River below Rulison CO, USGS Site #09092570 4/8/1977</i>
Instantaneous discharge (cfs)	1.1	1,560
Temperature, water (°C)	11.5	11
Field pH (standard units)	8.5	8.1
Specific conductance (µS/cm/cm at 25°C)	1,020	1,200
Total Dissolved Solids (mg/L)	988	733
Hardness as CaCO <sub>3</sub> (mg/L)	622	250
Chloride (mg/L)	41.0	230
Selenium (µg/L)	606	1
Dissolved oxygen (mg/L)	9	10
Source: USGS 2007		

The segment of the Colorado River into which Garfield Creek empties is on the *Monitoring and Evaluation List* for sediment load. The closest downstream water quality station that measures sediment on the Colorado River is near De Beque, Colorado. A summary of USGS data collected at this station indicates that the mean sediment load was 1,817 tons per day during the period of 1974 to 1976. The maximum and minimum for this location during the same period was 41,300 and 8 tons/day respectively (USGS 2007). Because of the distance from Garfield Creek—with numerous intervening perennial and ephemeral tributaries, many of which drain steep, poorly vegetated, erodible areas—water quality for the Rulison the , water quality of the Colorado River near the inflow of Garfield Creek is expected to differ significantly from that at either the Rulison or De Beque stations.

## Environmental Consequences

### *Proposed Action*

The Proposed Action would result in approximately 27 acres of surface disturbance for pad, road, and pipeline construction. Long term disturbance would be approximately 17 acres of access roads and pad area that are required to be in service for the life of the wells. Potential impacts to surface water associated with the Proposed Action occur from surface-disturbing activities, traffic, waste management, and the use, storage and transportation of fluids (i.e., chemicals, condensate, and produced water). Pad 15A and the associated pipeline, which would be bored under Garfield Creek, have potential for impacts to surface water due to the proximity to the creek.

As discussed in Section 3.14, the entry and exit points for the bore beneath Garfield Creek would be outside of the riparian corridor and the bore will be sufficiently deep to prevent direct impacts to the waterway, wetlands or riparian corridor of Garfield Creek. Surface-disturbing activities associated with well and facility pads, roads, and pipelines cause loss of vegetation cover, soil compaction and displacement, increased volume and velocity of runoff, and increased sedimentation and salinity in surface waters. Initially impacts can be minimized by stormwater management, stockpiling topsoil, controlling erosion, rehabilitation of disturbed surfaces quickly. Long term soil protection could be achieved by continued road and pad maintenance to reduce erosion, remediation of contaminated soils and minimizing the size of the long-term pad footprint through interim reclamation measures. As proposed, these measures would include limiting cut slope steepness, step-cutting, crowning road surfaces, installing culverts and drainage systems, and applying gravel to all upgraded BLM roads in the project area to a compacted thickness of 6 inches (Appendix A).

Oil and gas waste management practices have the potential to contaminate soils and surface water. Contamination of soils could cause long-term reduction in site productivity resulting in increased erosion and potential sediment and contaminant delivery to nearby waterways during runoff. Use, storage, and transportation of fluids such as produced water, hydraulic fracturing fluids, and condensate have the possibility of spills that could migrate to surface or groundwater. In addition, tanks used to store produced water and condensate would be placed in secondary containment to prevent offsite release. 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. A closed-loop drilling system would be implemented. In this process, drilling fluids are recycled, and cuttings area dried through the use of a shaker system, remediated, and stacked against the cutslope on the pad or hauled offsite. A traditional reserve pit would not be constructed. Cuttings management areas must be decontaminated to COGCC standards prior to pit closure.

Improperly designed and improperly installed culverts could result in soil degradation, including erosion at culvert outlets. This could potentially supply sediment to the Colorado River approximately 3 miles to the North. However, standard and site-specific surface-use COAs listed in Appendix A would be implemented to protect Garfield Creek the Colorado River, and any other waters of the U.S. potentially impacted by long-distance stormflow transport. Additionally, De Jour would monitor Garfield Creek for chemical, physical, and biological impacts.

### *No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action and any of the associated pad, road, and pipeline construction. Therefore, impacts to surface waters would not occur.

### Analysis on Public Land Health Standard 5 for Water Quality

The only component of the Proposed Action potentially affecting surface water is the 15A Pad located along CR 312 opposite Garfield Creek. Since this portion of the stream is on State-owned land rather than BLM land, Land Health Standard 5 for Water Quality does not apply.

#### **3.21.2 Groundwater**

##### Affected Environment

The Lower Piceance Basin contains both alluvial and bedrock aquifers (Colorado Geological Survey 2003). Unconsolidated alluvial aquifers are the most productive aquifers in the region (EPA 2004) and are defined as narrow, thin deposits of sand and gravel formed primarily along stream courses, in this case, along the Colorado River and its tributaries. Alluvial well depths are generally less than 200 feet and water levels typically range between 100 and 150 feet. 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.

The principal bedrock aquifers of the Piceance Basin are the Uinta Formation and the Parachute Creek Member of the Green River Formation, are defined as the upper and lower Piceance Basin aquifer systems. The Uinta Formation consists of discontinuous layers of sandstone, siltstone, and marlstone and is less permeable than the hydrologically connected upper Parachute Creek Member (Robson and Saulnier 1981). The upper most Uinta Formation also contains a shallow, perched aquifer that is separate from the upper aquifer unit (Cole et al. 1995). The upper Piceance Basin aquifer is underlain by the Mahogany confining unit, and correlates with the Mahogany Zone, the principal oil shale unit of the Piceance Basin. The Mahogany Zone separates the upper aquifer from the lower. The lower aquifer consists of the fractured marlstone of the lower part of the Parachute Creek Member. The thickness of the upper and lower aquifer units average 700 and 900 feet, respectively (CGS 2003). Both the upper and lower aquifer systems are found within the surrounding cliffs of the project area, but no water wells are completed within either the upper or lower bedrock aquifers units as described above. Beneath these two aquifer systems is a confining unit which consists of the lower two members of the Green River Formation, and the Wasatch Formation. Although considered a confining unit, some fresh water wells are completed in the discontinuous water bearing sands of the Wasatch Formation, but these water bearing intervals are considered to be localized.

Below the Wasatch Formation is the Cretaceous-aged Mesaverde aquifer. 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. The Mesaverde aquifer is of regional importance, but does not provide recharge into the fresh water system within the shallower groundwater system of the project area.

Water quality of the upper Piceance Basin aquifer unit is relatively good, ranging in Total Dissolved Solid (TDS) levels from 500 to 1,000 milligrams per liter (mg/L). In the lower unit, TDS concentrations increase from 1,000 to 10,000 mg/L along basin flow paths. Waters with TDS values in excess of 1,000 mg/L are generally unsuitable for potable supply. Water suitable for drinking has a Federal secondary standard set at 500 mg/L or less (EPA 2006). The quality of the water in the Mesaverde aquifer is highly variable, with concentrations of dissolved solids ranging from less than 1,000 mg/L in many of the basin-margin areas to more than 10,000 mg/L in the central part of the Piceance Basin (EPA 2004). In general, areas of the aquifer that are recharged by infiltration from precipitation or surface water sources contain relatively fresh water. However, water quality in the Piceance Basin is generally poor overall due to the presence of nahcolite deposits and salt beds found throughout the basin. Only very shallow waters such

as those from the surficial Wasatch Formation are used for drinking water (Graham 2001, cited in EPA 2004).

There are three permitted domestic water wells located within a 1-mile radius of the proposed project area. The wells are located approximately 3,500 feet to the northwest of the proposed 22A Pad. They are listed as having depths between 160 and 30 feet, static water levels between 15 and 22 feet bgs, and discharge rates ranging from 3 gpm to 8 gpm.

### Environmental Consequences

#### *Proposed Action*

Potential impacts to groundwater resources from the proposed development would include contamination of the groundwater with produced water, drilling mud, and petroleum constituents. Hydraulic fracturing (“fracing”) would be incorporated to create additional pathways to facilitate gas production. Agents called “proppants” used to prop open the fractures are mixed with both fresh water and produced water. Typical proppants include sand, aluminum, glass, or plastic beads, with less than 1% of other compounds such as corrosion-, friction-, and scale-inhibitors (EnerMax Inc. 2007). Fracing techniques are used to create secondary porosity fractures, held open by proppants, allowing the otherwise trapped gas to migrate up the borehole for production. Hydrofracturing would be conducted at 5,000 feet or more bgs. Drilling scenarios are developed to prevent fluids and produced hydrocarbons from migrating upward into fresh water zones. Geologic and engineering reviews are conducted to ensure that the cementing and casing programs are adequate to protect all downhole resources. With the use of proper construction practices, drilling practices, and BMPs, no significant adverse impact to groundwater aquifers is anticipated to result from the project (see Downhole COAs in Appendix A).

#### *No Action Alternative*

Under the No Action Alternative, the project components would be denied, and impacts to groundwater resources would not occur.

### **3.22 Wildlife, Aquatic**

#### Affected Environment

Garfield Creek is a perennial stream located within the DMDP boundary and flows approximately 0.27 mile from the 15A Pad. Fish sampling in Garfield Creek by CPW has documented the presence of speckled dace (*Rhinichthys osculus*), creek chub (*Semotilus atromaculatus*), and rainbow trout (*Oncorhynchus mykiss*). Sampling in Divide Creek, a perennial stream located approximately 2.5 miles west of Garfield Creek and outside the DMDP boundary has documented these species in addition to three BLM sensitive fish species—the roundtail chub, flannelmouth sucker, and bluehead sucker (see Section 3.17). Because Divide Creek is similar to Garfield Creek in terms of flows, physical habitat, and apparently water quality, it is possible that these species could also occur in Garfield Creek although not being found during sampling by CPW. Jackson Gulch, East Gulch, and other unnamed tributaries within the project boundaries that drain into Garfield are ephemeral and do not support fish. Garfield Creek drains directly to the Colorado River approximately 0.5 mile north of the 15A Pad. The Colorado River supports numerous native and non-native fish species and a variety of aquatic macroinvertebrates.

Aquatic macroinvertebrates living in perennial streams such as Garfield 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 Garfield 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 Garfield 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*

Construction activities associated with the proposed project would initially remove approximately 31.76 acres of upland vegetation. Some areas would be revegetated but total long-term upland habitat loss would total about 22.02 acres. This would result in both short-term and long-term erosion and soil loss. Short-term losses would result where all soils are disturbed until such time as proper revegetation is in place to stabilize soils. Long-term soil loss and sedimentation would be associated with the new roads, which would be in place and in use for several years. Sediment can impact some fish species that require clear water and clean gravels for spawning. Sediment can smother fish eggs, reduce water quality, and also reduce aquatic insect productivity. Due to the proximity of the Proposed Action to Garfield Creek, protective COAs for groundwater/soils and surface and groundwater quality would minimize potential impacts from the Proposed Action (Appendix A)

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

Habitat for the present fish population would remain adequate by maintaining the present condition of the aquatic and riparian environment of Garfield Creek Divide Creek.

#### *No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action therefore impacts to Aquatic Wildlife Species would be slightly less. However, disturbance acres would not change and human disturbance would be only slightly reduced due to the drilling of the fee wells.

### **3.23 Wildlife, Terrestrial (includes an analysis on Public Land Health Standard 3 for Plant and Animal Communities)**

#### Affected Environment

##### *Mammals*

Many terrestrial animals are known to exist in the project area. The following summary focuses on species for which seasonal ranges have been delineated by CPW (2009) and for which BLM has outlined associated management objectives. The DMDP area is located within overall range for mule deer (*Odocoileus hemionus*) as well as winter range, winter concentration area, and severe winter range for both mule deer and Rocky Mountain elk (*Cervus elaphus nelsonii*) (CPW 2008). The CPW monitors and manages these populations in Data Analysis Units (DAU) and Game Management Units (GMU). The site is found in deer DAU D-12, and elk DAU E-14, and in GMU 42.

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

Factors related to local deer and elk populations include increasing oil and gas development; construction of linear infrastructure such as roads, powerlines, and pipelines; industrial, commercial, and residential development associated with the overall human population growth of the area; and disturbance associated with increased human presence and activity in areas of winter range. The potential for impacts to localized deer and elk populations from these factors is exacerbated by the fact that winter range habitats are relatively limited in areal extent and, being located at lower elevations, in more gentle terrain, and along major transportation corridors are also the areas within which habitat loss from land development is concentrated.

Federal leases associated with the DMDP have a TL stipulation to reduce impacts to seasonally important use by deer and elk of winter range. This TL prohibits construction, drilling, or completion activities from December 1 through April 30 on lands overlying Federal lease COC66370 and Federal lease COC65531. Areas with a big game winter range TL stipulations represent approximately 600 acres, or 69% of the project area. The remaining 270 acres (31%) is either private or state-owned surface overlaying private minerals and would not be subject to a TL stipulation even if a well were to be directionally drilled into Federal minerals. However, in this Proposed Action there are no pads planned or analyzed in any areas that do not have a TL.

The site is located within winter range, severe winter range, and the winter concentration area for mule deer and elk as mapped by CPW (2011). Winter range is defined as the part of the overall range of a species where 90% of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up, or during a site-specific period of winter as defined for each data analysis unit (DAU) (CPW 2011). Severe winter range is that part of the range of a species where 90% of the individuals are located when the annual snowpack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten. Winter Concentration areas are that part of the winter range where densities are at least 200% greater than the surrounding winter range density during the same period used to define winter range in the average five winters out of ten (CPW 2011). Field surveys indicate that the project area is occupied winter range for elk and that mule deer occupy on a year-round basis.

Large carnivores present in the project vicinity include the mountain lion (*Puma concolor*) and black bear (*Ursus americanus*). Mountain lions move seasonally to generally follow migrations of their preferred prey, mule deer. Two medium-sized carnivores, the coyote (*Canis latrans*) and bobcat (*Lynx rufus*), are also present throughout the region in open habitats and broken or wooded terrain, respectively, where they hunt for small mammals, reptiles, and ground-dwelling birds. Smaller carnivores in habitats similar to those near the project site include the raccoon (*Procyon lotor*), ringtail (*Bassariscus astutus*), striped skunk (*Mephitis mephitis*), spotted skunk (*Spilogale gracilis*), long-tailed weasel (*Mustela frenata*), and, along Garfield Creek, the mink (*Mustela vison*).

Small mammals present within the planning area include rodents such as the rock squirrel (*Spermophilus variegatus*), golden-mantled ground squirrels (*Spermophilus lateralis*), least chipmunk (*Tamias minimus*),

and packrat (bushy-tailed woodrat) (*Neotoma cinerea*), as well as the desert cottontail (*Sylvilagus audubonii*) and/or the mountain cottontail (*S. nuttallii*). Rodents and, to a lesser extent rabbits, are the primary prey base for a variety of avian and mammalian predators.

#### *Upland Gamebirds and Waterbirds*

The wild turkey (*Meleagris gallopavo*) is native to the region and the largest member of upland fowl in North America. Wild turkeys are omnivorous, foraging on the ground or climbing shrubs and small trees to feed. They prefer eating hard mast such as acorns, nuts, and various trees, including pinyon pine as well as various seeds, berries such as juniper and bearberry, roots, and insects. Wild turkeys often feed in cow pastures and are also known to eat a wide variety of grasses. This site is located within an area mapped by the CPW as wild turkey winter range and winter concentration area as well as a wild turkey production area used by turkeys for nesting during the period from March 15 to August 15.

Waterbirds may also use Garfield Creek and the adjacent riparian habitat. These include occasional use for feeding by individual great blue herons (*Ardea herodias*) that nest in large cottonwoods along the Colorado River or other tributaries—no nests have been identified in the project vicinity. Slow-flowing reaches of Garfield Creek may also support occasional use for feeding by transient waterfowl such as the mallard (*Anas platyrhynchos*), blue-winged teal (*A. discors*), and green-winged teal (*A. crecca*), but the stream is generally too fast flowing for use by these species or other puddle ducks.

#### *Reptiles and Amphibians*

Species most likely to occur in the project area 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*), milk snake (*Lampropeltis triangulum*), and smooth green snake (*Ophedrys vernalis*) along Garfield Creek or other relatively lush areas.

Though the project area does not contain any suitable habitat, the surrounding area provides potentially suitable habitat for the northern leopard frog (see Section 3.17) and two additional amphibians, the Woodhouse's toad (*Bufo woodhousii*), and western chorus frog (*Pseudacris triseriata*). Within the CRVFO and vicinity, the spadefoot toad and Woodhouse's toad occur primarily along ephemeral washes that do not support fish and contain pools of water for a period of at least a few weeks every spring. The chorus frog occurs primarily in cattail and bulrush wetlands and along the vegetated margins of seasonal or perennial ponds and slow-flowing streams. Some existing stock ponds and slow-flowing portions of the drainages are potentially suitable for the northern leopard frog, though none have been documented.

### Environmental Consequences

#### *Proposed Action*

Impacts to Big Game Ungulates. The Proposed Action is estimated to result in the direct loss or fragmentation of 26.62 acres of wildlife habitat in the project area 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 17 acres for the remainder of oil and gas production. In areas where shrubs and trees would be disturbed, impacts to wildlife from loss of thermal and/or hiding cover would be long-term, possibly lasting more than 30 years following reclamation that it would take for these woody species to re-establish.

Construction activities, soil disturbance, and traffic could potentially spur the introduction and spread of weed species within the project area. Weed invasion and establishment has become an increasingly

important concern associated with surface disturbing activities in the West. Weeds often outcompete native plant species, rendering an area less productive as a source of forage for wildlife. However, implementation of the suggested mitigation measures in the Invasive, Non-Native Weeds section of this EA would minimize the potential for invasion and establishment of the project area by undesirable plants.

Indirect impacts on wildlife, especially big game and raptors, would be the disturbance caused by increased human activity, equipment operation, vehicle traffic, harassment by any dogs brought to the site by contractors, and noise related to drilling and completion activities. Most species of wildlife are relatively secretive and distance themselves from these types of disturbance or move to different areas screened by vegetation screening or topographic features. This avoidance, referred to as displacement, results in underuse of habitat near the disturbance. Avoidance of forage and cover resources adjacent to disturbance reduces habitat utility and the capacity of the affected acreage to support wildlife populations (BLM 1999a). Even when wildlife sensitive to disturbance do not avoid an area altogether, the changes in their movement patterns can result in greater use of less suitable habitats and increased physiological stress. These impacts are more significant during critical seasons such as winter, when cold temperatures, reduced forage quality, and reduced forage availability due to snow cover deplete their energy stores accumulated during summer and fall.

Another adverse impact of indirect habitat loss can occur in winter range that supports both deer and elk. Although these species compete to some extent for the same foods, particularly during winter, elk are generally able to tolerate colder temperatures and deeper snow cover. If disturbance from human activity and infrastructure affects the distribution of elk and causes them to congregate into smaller areas, the elk can out-compete deer for food and cause them to shift their patterns of use even farther. Assuming that some displacement of deer and elk does occur, winter range adjacent to the project area could also be indirectly affected and decline in quality as a result of increased use of those areas (White and Bartmann 1998). Another potential impact from greater concentrations of animals in areas to which affected animals are displaced is an increased risk for spread of infectious diseases.

The width of areas of indirect impact, or “effective habitat loss” due to relative avoidance of otherwise suitable habitats depends on several variables. These include the type of habitat adjacent to the human activity (availability of topographic or vegetation screening), the extent and quality of habitat into which displaced animals might move, the intensity and duration of the disturbance, the seasonality of the disturbance, and the innate sensitivity of the particular wildlife species. The scientific literature contains a number of references to the width of indirect habitat zones along roads and other areas of disturbance. These include the following:

- Ward (1976) and Irwin and Peek (1979) reported reductions in use by elk within 400 meters (0.25 mile) of little-used, slow-speed National Forest roads. Hershey and Leege (1976) reported reduced use within 400 meters (0.25 mile) of forest roads in summer range. Lyon (1979) reported that use by elk was reduced by 37% within 0.1 mile of a road and by 57% within 0.2 mile. Pedersen (1979) and Rost and Bailey (1979) reported that use by elk decreased within 250 meters (820 feet) of paved roads. Czech (1991) reported reduced use within 500 meters of a logging road after it was opened to public use. Frederick (1991) found that 73% of use by elk occurred in the 50% of an area more than 400 meters (0.25 mile) from a road.
- Sawyer and Nielson (2005) reported that elk showed reduced use of areas within 2.8 kilometers (1.7 miles) of roads on summer range. In winter, the zone of reduced use was 1.2 kilometers (0.75 miles), which the authors attributed to reduced human use of the roads.
- Both Lyon (1979) and Perry and Overly (1976) noted that the actual extent of reduced habitat use along roads was affected by the amount of vehicular traffic and the density of nearby vegetation

cover. Witmer and DeCalesta (1985) found that open spur roads showed a significant reduction up to 250 meters away.

- Witmer and DeCalesta (1985) found no reduction in use within 250 meters of spur roads after the roads were closed to vehicles. Edge and Marcum (1985) found that elk avoided logging roads by distances of 500 to 1,000 meters on working days but showed no avoidance of the roads on weekends. Similarly, Johnson et al. (1990) reported that elk returned to areas of both summer range and winter range when construction activities that had caused them to leave an area had ceased. Czech (1991) reported that tolerance of logging roads by elk was correlated with the distance to hiding cover.
- Knight et al. (2000) found that use by mule deer was reduced within 200 meters of a road (i.e., a road-effect zone of 200 meters, or 0.125 mile). Lyon (1979) found that the reduction in habitat use was greater in sagebrush than in pinyon/juniper, apparently due to difference in screening.

The following literature provides information specific to oil and gas activities:

- Hiatt and Baker (1981) found that an oil well drill pad was temporarily avoided but that the access road was not. Johnson et al. (1990) also found that elk avoided oil and gas activities temporarily but returned to these areas when the activities ceased. Knight (1980) reported that elk showed alarm responses when exposed to a continually shifting seismic exploration line but not in relation to regular activities at an oil and gas well pad and access road. Van Dyke and Klein (1996) reported that elk responses to oil drilling activities were not permanent but instead that “elk compensated for site-specific environmental disturbance by shifts in use of range, centers of activity, and use of habitat rather than abandonment of range.”
- Powell (2003) found reduced use by mule deer within 500 meters of oil and gas roads and drill pads in southwestern Wyoming during fall, winter, spring, and calving season (early summer). However, he did not collect data for narrower zones, so it is not known whether the overall reduction was uniform or greater in closer proximity to the disturbance, as would be assumed. The habitat type was a sagebrush shrubland with low topographic relief.
- Sawyer et al. (2006), in ongoing studies of oil and gas activities on mule deer in southwestern Wyoming, documented increasing avoidance of access roads during the first 3 years of development, with the average distance from wells to areas of highest use increasing from 2.1 to 3.7 kilometers (1.3 to 2.3 miles). However, deer distribution showed the opposite pattern during the fourth year, with greater use near the wells than remote from them. The authors attributed this reversal in deer winter use to the severe winter (the well pads were located farther into the basin, at lower elevations, than the reference area that had no winter drilling). During the fifth year, with a relatively mild winter, deer distribution was the same as prior to drilling, which the authors interpreted as possibly indicating habituation.

In their final report, Sawyer et al. (2009) reported on their findings relative to implementation in their study area of winter drilling combined with use of pipelines (which they called a “liquids gathering system [LGS]) to convey produced water and condensate as well as natural gas:

*“[The] most effective mitigation measures for reducing impacts to mule deer will likely involve technology and planning that minimize the number of well pads and the human activity associated with them. Combined with careful planning, LGS [pipelines] and directional drilling represent two development strategies that provide effective means for reducing the number of well pads needed to recover gas resources and minimizing the amount of human activity at*

*producing pads. Our results suggest that indirect habitat loss to mule deer may be reduced by approximately 38-60% when water and condensate products are collected in pipelines rather than being stored at well pads and hauled off with tanker trucks. Additionally, because [an] LGS can be installed underground and usually in existing pipeline corridors, the associated direct habitat loss is minimal. When directional drilling technology is used to drill multiple wells from a single pad, the amount of habitat loss is significantly reduced compared to a scenario where single wells are drilled from multiple pads. However, given the high levels of human activity associated with drilling, wildlife managers should expect considerable short-term displacement of wintering mule deer if year-round drilling is permitted in crucial winter range.”*

Dejour has committed to installing buried lines, equivalent to the liquid gathering system, to collect and convey produced water to centralized collection facilities for the three Jolley Mesa pads. Use of pipelines instead of trucks to haul produced water from these pads would reduce truck traffic—and associated disturbance—by perhaps thousands of trips per year, thereby reducing impacts to wildlife year-round.

Dejour is expected to request an exception to the big game winter range TL stipulation that prohibits construction, drilling, and completion activities associated during a portion of the winter season (Appendix A). Such a request is expected to be for two to three pads per winter throughout the drilling phase of the project. BLM would consider requests for TL exceptions based on the location of the location of the specific pads and on mitigation measures proposed by Dejour. A separate request would have to be made and considered each year.

Mitigation for wildlife impacts resulting from the development of Federal oil and gas leases is provided in the current CRVFO land use plan (BLM 1999), which requires operators to implement measures to reduce impacts to winter range if developments reach a predetermined level:

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

The threshold analyses of pad and road density for the DMDP yield an average density for the four well pads of one pad per 217.5 acres, or 2.9 pads per 640 acres, well below the threshold of four pads per 640 acres. The total of 1.3 miles of access roads to be used to access the four well pads yields an average road density of miles per 640 acres, above the threshold of 1.05 miles per 640 acres, which is also considerably below the threshold of three miles of road per 640 acres. However, the BLM may require mitigation, beyond any requirements identified by CPW in its SUA for development within the GCSWA, in determining whether sufficient basis exists for granting of an exception to the prohibition specified in CRVFO’s current land use plan (BLM 1999b) against oil and gas activities related to development of Federal mineral estate on State-owned lands within the GCSWA and the West Rifle Creek SWA. See Section 1.4 for a discussion of issues around this issue of land use conformance.

**Impacts to Other Wildlife Species.** Impacts to carnivores, small mammals, wild turkeys, and reptiles and amphibians are expected to be negligible under the Proposed Action based on the small area of direct and indirect habitat loss and the proximity of the project components to existing well-traveled roads (i.e., CR 312 for the 15A Pad) and existing oil and gas developments also accessed along CR 312 and for numerous well pads and access roads on private lands atop Jolley Mesa in the vicinity of the proposed 21A, 21B, and 2A pads. Specific to wild turkeys, the type of oakbrush habitat primarily used by this species for feeding, nesting, and brood rearing, although present in the vicinity, is relatively poorly represented in proximity to components of the Proposed Action.

*No Action Alternative*

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action and any of the associated upgrades to the pad, road, and pipeline. No new surface disturbance on private land would occur under the No Action Alternative, thus avoiding impacts from this development to terrestrial wildlife species.

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

A formal LHA was completed in 2009 for the portion of the CRVFO that includes the project area. The LHA report was published in 2010. Habitat loss and fragmentation and disturbance from human activity have the potential to trend the area away from meeting this standard. However, with implementation of the mitigation measures to be applied as COAs (Appendix A), the Proposed Action is not expected to prevent Standard 3 from being met.

**4. SUMMARY OF CUMULATIVE IMPACTS**

Until relatively recently, modifications of the region have been characteristic of agricultural and ranching lands, with localized industrial impacts associated with the railroad and I-70 corridors. More recently, these changes are cumulative to the growth of residential and commercial uses, utility corridors, oil and gas developments, and other rural industrial uses. These increasing activity levels have accelerated the accumulation of impacts in the area. Cumulative impacts have included: direct habitat losses; habitat fragmentation and losses in habitat effectiveness; elevated potential for runoff, erosion, and sedimentation; expansion of noxious weeds and other invasive species; and increased noise and traffic and reductions in the scenic quality of the area (BLM 1999a: 4-1 to 4-68).

In the past 5 years, oil and gas development in western Colorado has increased dramatically, including a substantial increase in production within 3 miles of the DMDP area. Completed in 2005, the Castle Springs Geographic Area Plan (GAP) includes area in T7S R91W (approximately 3 miles south of the proposed DMDP) planned for development of 98 wells from 18 well pads, with associated compressor facility. These components totaled approximately 55 acres of initial disturbance and 30 acres of long-term disturbance. The Antero Resources North Castle Springs MDP, completed in 2010, includes an additional 186 wells from seven pads, totaling 139 acres of initial disturbance and 61 acres of long-term disturbance. For the two projects combined, initial disturbance was projected at up to 194 acres, with interim reclamation reducing this to 91 acres of long-term disturbance.

Other oil and gas development has also been proposed, analyzed, and initiated in the general area surround the DMDP. Completed in 2008, the Williams Production (originally Orion Energy) Kokopelli MDP, located in T6S R91W and abutting the DMDP project area to the west, includes 163 wells on 16 pads six new pads and 10 existing pads, totaling 83 acres of initial disturbance and 36 acres of long-term disturbance.

Directly west and south of the DMDP project area, the Bill Barrett Corporation Gibson Gulch I MDP, located in T6S R91W and completed in 2009, includes 131 wells on ten pads, totaling 82 acres of initial disturbance and 30 acres of long-term disturbance. The Gibson Gulch II MDP, expected to be published shortly, includes approximately 88 wells from six new pads, totaling 67 acres of initial disturbance and 20 acres of long-term disturbance in addition to the amount analyzed in the Gibson Gulch I MDP.

In addition to the GAP and MDP developments listed above, a small number of additional wells and well pads have previously or recently been developed within or near the GCSWA. Cumulatively with the

Dejour MDP, these previous or pending GAP/MDP projects could include the following levels of development:

- 734 wells
- 61 well pads
- 453 acres of initial disturbance
- 194 acres of long-term disturbance.

Although this total may appear large, the distribution of the approved or proposed facilities across a total of approximately 28 square miles within the combined project boundaries represents a pad density of approximately 2.2 per square mile, not a high density. This density is further reduced when considering the intervening undeveloped public and private lands in the vicinity of the DMDP and nearby projects. Therefore, the primary potential cumulative impact is probably related primarily to habitat fragmentation—particularly when miles of access road are added to acres of pads—rather than direct or indirect habitat loss. Several factors tend to ameliorate to some extent the potential for adverse impacts associated with both habitat loss or modification and habitat fragmentation:

1. Access roads generally consist of two types: (a) County or other heavily traveled roads that have historically fragmented the habitat, and (b) private or BLM access roads that would receive relatively light use after oil and gas developments move into long-term production and maintenance. Impacts to local residents and sensitive wildlife would decrease substantially in any given area following the initial period of development, and most species of wildlife are expected to be relatively tolerant of routine traffic associated with post-drilling and post-completion activities.
2. Recent proliferation in the use of pipelines instead of heavy trucks to haul fluids used in or produced by oil and gas development has already, and is expected increasingly to reduce disturbance to local residents as well as wildlife by reducing emissions of fugitive dust and vehicle exhaust, reduce impacts to air quality.
3. Modern methods such as closed-loop drilling to reduce or eliminate pits containing potentially toxic fluids, fracture-stimulation from remote locations, “simops” to more quickly drill and complete the wells on a pad, and directional drilling to reduce the number of pads per given number of wells are expected to reduce further the severity of potential impacts to humans, big game, and other resources.
4. The concurrent BLM/State permitting process attaches a number of best management practices or specific mitigation measures (e.g., see Appendix A) to minimize adverse impacts to human, wildlife, and abiotic receptors, including impacts that tend to decrease habitat patch size, contiguity, and connectivity as well as habitat quality and quantity.
5. Unlike other developments on private lands outside the jurisdiction of BLM—such as historic conversion of native habitats to hay pastures or other agricultural lands, historic conversion of native habitats or agricultural lands to sand and gravel operations along the Colorado River floodplain and adjacent terraces, and historic, ongoing, and likely future construction and expansion of residential, recreational, and commercial/industrial developments throughout the region—oil and gas projects such as the DMDP are temporary in nature, eventually leading to plugging and abandonment of wells and reclamation of well pads and access roads.

The combination of these factors does not mean that project-specific or cumulative adverse impacts to humans, wildlife, air quality, water quality, and other resources will not occur. However, it does mean that adverse impacts associated with each project are avoided, minimized, or otherwise mitigated to an extent that supports a determination of no significant impacts for each project. Similarly, the BLM has concluded in that the cumulative impacts are also below the threshold of significance.

Nonetheless, while none of the cumulative impacts described in the 1999 FSEIS was characterized as significant, and while new technologies and regulatory requirements have reduced the impacts of some land uses, it is clear that past and present actions have had, and that these and reasonably foreseeable future actions will continue to have, adverse impacts on various elements of the human environment. The anticipated impact levels for existing and future actions range from negligible to locally major. Chief among these are:

- Residential, recreational, and commercial/industrial developments, which result in permanent habitat loss and fragmentation and increased human presence and use in an area.
- Construction or expansion of public roads, along with substantially increased traffic speeds and volumes, which result in habitat fragmentation, direct and indirect habitat loss, and direct mortality of some wildlife.

Although the Proposed Action would contribute incrementally to the cumulative adverse impact for some resources—including air quality, vegetation, migratory birds, big game ungulates, and visual and scenic quality—this contribution would be minor. For other resources and uses, the cumulative impacts would be negligible.

**5. PERSONS AND AGENCIES CONSULTED**

Dejour Energy (USA) Corporation: Neyeska Mut, Gary Haefele, Bob Richardson, Alan Seeling

Access Environmental: Rick Obernolte

Olsson Associates: Lorne Prescott

SGM Inc.: Barry Giles

**6. INTERDISCIPLINARY REVIEW**

BLM staff from the CRVFO who participated in the preparation of this EA are listed in Table 14. This participation included review of existing information available from both BLM and public sources, site visits to evaluate on-the-ground conditions, review of survey results submitted by Dejour consultants, analysis of anticipated impacts, and attachment of appropriate BMPs and COAs.

<i>Name</i>	<i>Title</i>	<i>Areas of Participation</i>
Beth Brenneman	Ecologist	Invasive Non-native Species, Special Status Species, Vegetation
John Brogan	Archaeologist	Cultural Resources, Native American Religious Concerns
Vanessa Bull	Natural Resource Specialist	EA Project Lead, Access and Transportation, Noise, Range, Realty Authorizations, Recreation, Socio-Economics
Allen Crockett, Ph.D.	Supervisory NRS	NEPA Review
Bob Hartman	Petroleum Engineer	Downhole COAs

<b>Table 14. BLM Interdisciplinary Team Authors and Reviewers</b>		
<i>Name</i>	<i>Title</i>	<i>Areas of Participation</i>
Shauna Kocman, Ph.D.	Hydrologist	Air Quality, Noise, Soils, Surface Water, Waters of the U.S.
Julie McGrew	Natural Resource Specialist	Visual Resources
Kimberly Miller	Outdoor Recreation Planner	Recreation
Isaac Pittman	Rangeland Management Specialist	Range
Sylvia Ringer	Wildlife Biologist	Migratory Birds, Special Status Species, Wildlife
Todd Sieber	Geologist	Geology and Minerals, Groundwater, Fossil Resources

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**Appendix A**

**Standard and Site-Specific Conditions of Approval**

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## SURFACE-USE CONDITIONS OF APPROVAL

### STANDARD COAS APPLICABLE TO ALL ACTIVITIES FOR THE DEJOUR 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 DMDP. 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. A pre-construction onsite meeting shall be held **prior to pad construction**. Attendees will include the appropriate operator representatives, construction contractors, and BLM specialists including the natural resource specialist, hydrologist, and ecologist.
2. Road Construction and Maintenance. Roads shall be crowned, ditched, surfaced, drained with culverts and/or water dips, and constructed to BLM Gold Book standards. Initial gravel application shall be a minimum of 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 6 inches, blading and/or gravelling shall be conducted as approved by the BLM.
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 cofferdam 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 West Regulatory Branch at 970-243-1199 ext. 17 (Travis Morse).

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

5. Jurisdictional Waters of the U.S. 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. Contact the USACE Colorado West Regulatory

Branch at 970-243-1199 ext. 17 (Travis Morse). Copies of any printed or emailed approved USACE permits or verification letters 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 Colorado River Valley Field Office to determine appropriate mitigation, including verification of native plant species to be used in restoration.
7. Reclamation. An onsite meeting shall also be held **prior to interim reclamation of the pad**. Attendees shall include the appropriate operators' representatives, construction contractors, and BLM specialists including the natural resource specialist, hydrologist, and ecologist.

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. Reclamation Plans. In areas that have low reclamation potential or are especially challenging to restore, reclamation plans will be required prior to APD approval. The plan shall contain the following components: detailed reclamation plans, which include contours and indicate irregular rather than smooth contours as appropriate for visual and ecological benefit; timeline for drilling completion, interim reclamation earthwork, and seeding; soil test results and/or a soil profile description; amendments to be used; soil treatment techniques such as roughening, pocking, and terracing; erosion control techniques such as hydromulch, blankets/matting, and wattles; and visual mitigations if in a sensitive VRM area.
- b. Deadline for Interim Reclamation Earthwork and Seeding. Interim reclamation to reduce a well pad to the maximum size needed for production, including earthwork and seeding of the interim reclaimed areas, shall be completed within 6 months following completion of the last well planned to be drilled on that pad as part of a continuous operation. If a period of greater than one year is expected to occur between drilling episodes, BLM may require implementation of all or part of the interim reclamation program.

Reclamation, including seeding, of temporarily disturbed areas along roads and pipelines, and of topsoil piles and berms, shall be completed within 30 days following completion of construction. Any such area on which construction is completed prior to December 1 shall be seeded during the remainder of the early winter season instead of during the following spring, unless BLM approves otherwise based on weather. If road or pipeline construction occurs discontinuously (e.g., new segments installed as new pads are built) or continuously but with a total duration greater than 30 days, reclamation, including seeding, shall be phased such that no portion of the temporarily disturbed area remains in an unreclaimed condition for longer than 30 days. BLM may authorize deviation from this requirement based on the season and the amount of work remaining on the entirety of the road or pipeline when the 30-day period has expired.

If requested by the project lead NRS for a specific pad or group of pads, the operator shall contact the NRS by telephone or email approximately 72 hours before reclamation and reseeding begin. This will allow the NRS to schedule a pre-reclamation field visit if needed to ensure that all parties are in agreement and provide time for adjustments to the plan before work is initiated.

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.

- c. Topsoil Stripping, Storage, and Replacement. All topsoil shall be stripped following removal of vegetation during construction of well pads, pipelines, roads, or other surface facilities. In areas of thin soil, a minimum of the upper 6 inches of surficial material shall be stripped. The BLM may specify a stripping depth during the onsite visit or based on subsequent information regarding soil thickness and suitability. The stripped topsoil shall be stored separately from subsoil or other excavated material and replaced prior to final seedbed preparation. The BLM best management practice (BMP) for the Windrowing of Topsoil (COA number 19) shall be implemented for well pad construction whenever topography allows.
- d. 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.

If directed by the BLM, the operator shall implement measures following seedbed preparation (when broadcast-seeding or hydroseeding is to be used) to create small depressions to enhance capture of moisture and establishment of seeded species. Depressions shall be no deeper than 1 to 2 inches and shall not result in piles or mounds of displaced soil. Excavated depressions shall not be used unless approved by the BLM for the purpose of erosion control on slopes. Where excavated depressions are approved by the BLM, the excavated soil shall be placed only on the downslope side of the depression.

If directed by the BLM, the operator shall conduct soil testing prior to reseeding to identify if and what type of soil amendments may be required to enhance revegetation success. At a minimum, the soil tests shall include texture, pH, organic matter, sodium adsorption ratio (SAR), cation exchange capacity (CEC), alkalinity/salinity, and basic nutrients (nitrogen, phosphorus, potassium [NPK]). Depending on the outcome of the soil testing, the BLM may require the operator to submit a plan for soil amendment. Any requests to use soil amendments not directed by the BLM shall be submitted to the CRVFO for approval.

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

- e. Seed Mixes. A seed mix consistent with BLM standards in terms of species and seeding rate for the specific habitat type shall be used on all BLM lands affected by the project (see Attachments 1 and 2 of the letter provided to operators dated May 1, 2008). Note that temporary seeding no longer allows the use of sterile hybrid non-native species.

For private surfaces, the menu-based seed mixes are recommended, but the surface landowner has final 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.

- f. 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 or by hydroseeding and hydromulching. Hydroseeding and hydromulching shall 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.

- g. Mulch. Mulch shall be applied within 24 hours following completion of seeding. Mulch may consist of either hydromulch or of certified weed-free straw or certified weed-free native grass hay crimped into the soil.

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

- h. 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. Cut-and-fill slopes along drainages or in areas with high erosion potential shall also be protected from erosion using hydromulch designed specifically for erosion control or biodegradable blankets/matting, bales, or wattles of weed-free straw or weed-free native grass hay. A well-anchored fabric silt fence shall also be placed at the toe of cut-and-fill slopes along drainages or to protect other sensitive areas from deposition of soils eroded off the slopes. Additional BMPs shall be employed as necessary to reduce soil erosion and offsite transport of sediments.
- i. 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 will approve the type of fencing.
- j. 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. Big Game Winter Range Timing Limitation. To minimize impacts to wintering big game, no construction, drilling or completion activities shall occur during a Timing Limitation (TL) period from **December 1 to April 30**.
10. Bald and Golden Eagles. It shall be the responsibility of the operator to comply with the Bald and Golden Eagle Protection Act (Eagle Act) with respect to “take” of either eagle species. Under the Eagle Act, “take” includes to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest and disturb. “Disturb” means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle; (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior. Avoidance of eagle nest sites, particularly during the nesting season, is the primary and preferred method to avoid a take. Any oil or gas construction, drilling, or completion activities planned within 0.5 mile of a bald or golden eagle nest, or other associated activities greater than 0.5 miles from a nest that may disturb eagles, shall be coordinated with the BLM project lead and BLM wildlife biologist and the USFWS representative to the BLM Field Office (970-876-9051).
11. 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 1 to June 1**. 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. If project-related activities are initiated within the specified buffer distance of any active nest, even if outside the 60-day TL period, the operator remains responsible for compliance with the MBTA with respect to a “take” of birds or of active nests (those containing eggs or young), including nest failure caused by human activity (see COA for Migratory Birds).
12. 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, hydraulic fracturing flowback pits, cuttings trenches (if covered by water or other fluid), and evaporation pits. Liquids 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 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 shall 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 to the BLM Field Office at 970-876-9051 and visit <http://www.fws.gov/mountain-prairie/contaminants/oilpits.htm>.

13. Birds of Conservation Concern. Pursuant to BLM Instruction Memorandum 2008-050, all surface-disturbing activities are prohibited from **May 1 to July 1** to reduce impacts to Birds of Conservation Concern (BCC). An exception to this TL will be granted if nesting surveys conducted no more than one week prior to surface-disturbing activities indicate that no BCC species are nesting within 30 meters (100 feet) of the area to be disturbed. Nesting shall be deemed to be occurring if a territorial (singing) male is present within the distance specified above. Nesting surveys shall include an audial 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 1 and continue into the 60-day period at the same location.
14. Range Management. Range improvements (fences, gates, reservoirs, pipelines, etc.) shall be avoided during development of natural gas resources to the maximum extent possible. If range improvements are damaged during exploration and development, the operator will be responsible for repairing or replacing the damaged range improvements. If a new or improved access road bisects an existing livestock fence, steel frame gate(s) or a cattleguard with associated bypass gate shall be installed across the roadway to control grazing livestock.
15. Ips Beetle. To avoid mortality of pinyon pines due to infestations of the *Ips* beetle, any pinyon trees damaged during road, pad, or pipeline construction shall be chipped after being severed from the stump or grubbed from the ground, buried in the toe of fill slopes (if feasible), or cut and removed from the site within 24 hours to a location approved by the Colorado State Forest Service.
16. 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.

17. 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 from a Federal agency insofar as practicable. When not practicable, the operator shall bear the cost of the services of a non-Federal professional.

Within five working days, the BLM 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).

18. Visual Resources. All applications for permit to drill (APDs) shall include a detailed, site-specific description outlining how the Proposed Action will meet the VRM Class of the area where the action is proposed. The specific location of the Proposed Action, including pads, roads, and pipelines, shall be shown on a map and shall include associated cut-and-fill data (location, horizontal and vertical extent, slope length, and steepness).

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.

To the extent practical, 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.

Above-ground facilities shall be painted with a color specified by BLM for each well pad (see site-specific COAs, below). During construction, BLM and Dejour representatives shall jointly review construction measures to determine effectiveness in meeting visual resource mitigation measures, and if subtle changes in construction techniques are warranted.

19. Windrowing of Topsoil. Topsoil shall be windrowed around the pad perimeter to create a berm that limits and redirects stormwater runoff and extends 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 microbial activity, reduce erosion, and minimize weed establishment.
20. Pits. A minimum of 2 feet of freeboard shall be maintained in pits containing fluids. 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. The design, construction, lining, and leak detection of the flowback pit shall be approved by a qualified engineer licensed in the state of Colorado. An engineer shall confirm the pit is built to the specification in the design package including witnessing the adequate sealing of the seams. The operator must appropriately net the completion/flowback pit, in a timely manner, and maintain the fencing and netting until the pit is closed.
21. Soils. 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.
22. Requirement for self-contained flare unit. The operator shall use a flare system while drilling which contains fluids and has self-ignition to flare hydrocarbons generated during drilling.
23. Interim Reclamation Related to Multiple Drilling Phases. Within one year of completion of the initial development wells in the first cellarhole configuration or within one year of completion of all development wells on a pad (whichever situation arises), the operator shall stabilize the disturbed area by recontouring, mulching, installing runoff and erosion controls, replacing topsoil as directed, and seeding with a BLM-prescribed native seed mix (or landowner-requested seed mix on privately owned or State-owned surface), and conducting weed control as necessary. In cases where the development drilling is conducted in phases on a single pad with periods of inactivity 1 year or longer in duration, slopes shall be recontoured to the extent necessary to accommodate seeding, and seed mixes required by BLM shall be applied to stabilize the soil between visits per direction of the BLM.

**SITE-SPECIFIC COAS APPLICABLE TO PADS WITHIN THE DMDP AREA**

The following site-specific surface use COAs are in addition to the standard COAs applicable to all wells within the DMDP and all stipulations attached to the respective Federal leases.

**Site-Specific COAs pertaining to the 15A Pad:**

1. Aquatic Wildlife Habitat. The operator shall conduct sampling to determine water quality, habitat quality and macro invertebrate community at a point upstream and downstream of the proposed

construction before any surface disturbing activities occur and post interim reclamation. The sampling will be conducted to evaluate any impacts that have resulted from construction and drilling activities or in the event of a spill.

2. Stormwater Management. The operator shall adequately protect the creek from sediment and contamination in the event of an accidental spill. The operator shall separate the surrounding landscape runoff water and pad runoff water to separate culverts draining to the Creek. The pad water shall be drained to a sedimentation basin and a gated culvert, which shall be closed during drilling activities to prevent an accidental spill from reaching the stream. The culverts shall be opened during rainfall events. Additionally, all areas with tanks storing fluids associated with drilling activities must have adequate containment in the event of a spill.

Additional erosion control shall be provided with a hydromulch rated for erosion and including a hydraulic soil stabilizer such as polyacrylamide. The hydromulch shall provide at least 6 months of erosion control.

3. Engineering Review and Construction Oversight. Prior to commencing any surface disturbing activities, a qualified geotechnical engineer licensed in the State of Colorado shall prepare a site evaluation and analysis in at-risk areas showing evidence of slope instability ( i.e., past mass movement or slumping of soils, high soil moisture content present in undisturbed soils, and presence of springs or seeps), for cut-and-fill slopes in excess of 30 feet in height, and cut-and-fill slope angles steeper than the requirements in the 2007 Gold Book (3:1 in erosive soil, 1:1 in common soils, 0.5:1 in conglomerate, and 0.25:1 in solid rock) as determined by the BLM.

During construction of the pad/and or road sections in areas at risk of slope instability or environmentally sensitive areas a qualified independent construction inspector or civil/geotechnical engineer shall be onsite during all phases of construction in the at risk areas and as determined by the BLM. The inspector/ engineer shall confirm the pad and/or road sections are built to specification in the design package including, but not limited to cut and full slope staking, disturbance limits staking, excavation and embankment placement, slope compaction, slope retention devices, slope benching, at grade and subgrade drainages stormwater control measures etc. Inspection reports prepared by the construction inspector or onsite engineer will be submitted to the BLM.

4. Pipeline Boring. Prior to commencing any surface disturbing activities, a detailed design package of the proposed pipeline boring shall be submitted to the BLM for approval by the authorized officer. No activities associated with boring the pipeline shall cause direct impacts to any of the waterway, wetlands, or riparian corridor associated with Garfield Creek.
5. Paint Color. Above-ground facilities shall be painted **Shale Green**. The BLM can provide more specific information related to matching this paint color.

**Site-Specific COAs pertaining to the 21A, 21B, and 22A Pads:**

6. Above-ground facilities shall be painted **Shadow Gray**. The BLM can provide more specific information related to matching this paint color.

**DOWNHOLE CONDITIONS OF APPROVAL**

**Applications for Permit to Drill Submitted to the BLM as of 09/30/2011\***

**Company/Operator: Dejour Energy (USA) Company**

<i>Field</i>	<i>Well*</i>	<i>Pad*</i>	<i>Bottomhole Location T6S, R91W, 6<sup>th</sup> PM</i>	<i>Surface Location T6S, R91W, 6<sup>th</sup> PM</i>	<i>Lease</i>
Exploratory	Federal 2/3-10-15	15A	NWSE, Sec 15	NWSE, Sec 15	COC65531
Exploratory	Federal 6/7- 8-15	15A	SENW, Sec 15	NWSE, Sec 15	COC65531
Exploratory	Federal 6/7-13-21	21A	SESW, Sec 21	SESW, Sec 21	COC66370
Exploratory	Federal 6/7-14-21	21A	SESW, Sec 21	SESW, Sec 21	COC66370
Exploratory	Federal 6/7-15-21	21A	SESW, Sec 21	SESW, Sec 21	COC66370
Exploratory	Federal 6/7-16-21	21A	SESW, Sec 21	SESW, Sec 21	COC66370
Exploratory	Federal 14/15-1-21	21B	NENE, Sec 21	SENE, Sec 21	COC66370
Exploratory	Federal 14/15-2-21	21B	NENE, Sec 21	SENE, Sec 21	COC66370
Exploratory	Federal 14/15-3-21	21B	NENE, Sec 21	SENE, Sec 21	COC66370
Exploratory	Federal 14/15-4-21	21B	NENE, Sec 21	SENE, Sec 21	COC66370
Exploratory	Federal 14/15-5-21	21B	SENE, Sec 21	SENE, Sec 21	COC66370
Exploratory	Federal 14/15-6-21	21B	SENE, Sec 21	SENE, Sec 21	COC66370
Exploratory	Federal 14/15-7-21	21B	SENE, Sec 21	SENE, Sec 21	COC66370
Exploratory	Federal 14/15-8-21	21B	SENE, Sec 21	SENE, Sec 21	COC66370
* Downhole COAs for wells for which APDs have not been submitted to the BLM as of the date of completion of DOI-BLM-CO-N040-2010-0068-EA (09/30/2011) will be attached to those APDs at the time of approval.					

1. Twenty-four hours *prior* to (a) spudding, (b) conducting BOPE tests, (c) cementing/running casing strings, and (d) within twenty-four hours *after* spudding, the CRVFO shall be notified. One of the following CRVFO inspectors shall be notified by phone at 970-876-9064. The BLM CRVFO inspectors are Julie King, Lead PET; David Giboo, PET; Greg Rios, PET; Alan White, PET; and Tim Barrett, PET.
2. A CRVFO petroleum engineer shall be contacted for a verbal approval prior to commencing remedial work, plugging operations on newly drilled boreholes, changes within the drilling plan, sidetracks, changes or variances to the BOPE, deviating from conditions of approval, and conducting other operations not specified within the APD. Contact Bob Hartman at 970-244-3041 or a CRVFO petroleum engineer at 970-876-9049 (office) or 970-319-5837 (cell) for verbal approvals.
3. If a well control issue or failed test (e.g. kick, blowout, water flow, casing failure, or a bradenhead pressure increase) arises during drilling or completions operations, contact Bob Hartman at 970-244-3041 or a CRVFO petroleum engineer at 970-876-9049 (office) or 970-319-5837 (cell) within **24 hours** from the time of the event. IADC/Driller's Logs and Pason Logs (mud logs) shall be forwarded to CRVFO, Petroleum Engineer, 2300 River Frontage Road, Silt, CO 81652 within 24 hours of a well control event.
4. The BOPE shall be tested and conform to Onshore Order No. 2 for a **5M** system and recorded in the IADC/Driller's log. A casing head rated to 5,000 psi or greater shall be utilized.

5. An electrical/mechanical mud monitoring equipment shall be function tested prior to drilling out the surface casing shoe. As a minimum, this equipment shall include a trip tank, pit volume totalizer, stroke counter, and flow sensor.
6. Prior to drilling out the surface casing shoe, gas detecting equipment shall be installed in the mud return system. The mud system shall be monitored for hydrocarbon gas/pore pressure changes, rate of penetration, and fluid loss.
7. A gas buster shall be functional and all flare lines effectively anchored in place, prior to drilling out the surface casing shoe. The discharge of the flare lines shall be a minimum of 100' from the well head and targeted at bends. The panic line shall be a separate line (not open inside the buffer tank) and effectively anchored. All lines shall be downwind of the prevailing wind direction and directed into a flare pit, which cannot be the reserve pit. The flare system shall use an automatic ignition. Where noncombustible gas is likely or expected to be vented, the system shall be provided supplemental fuel for ignition and maintain a continuous flare.
8. After the surface/intermediate casing is cemented, a Pressure Integrity Test/Mud Equivalency Test/FIT will be performed on the first well drilled in accordance with OOGO No. 2; Sec. III, B.1.i. to ensure that the surface/intermediate casing is set in a competent formation. This is not a Leak-off Test, but a formation competency test, insuring the formation at the shoe is tested to the highest anticipated mud weight equivalent necessary to control the formation pressure to the next casing shoe depth or TD. Submit the results from the test via email ([whowell@blm.gov](mailto:whowell@blm.gov)) on the first well drilled on the pad or any horizontal well and record results in the IADC log. Report failed test to the CRVFO Petroleum Engineer at 970-876-9049 (office) or 970-319-5837 (cell). A failed pressure integrity test is more than 10% pressure bleed-off in 15 minutes.
9. As a minimum, cement shall be brought to 200 feet above the Mesaverde. After WOC for the production casing, a CBL shall be run to verify the TOC and an electronic copy in .las and .pdf format will be submitted to CRVFO Petroleum Engineer, 2300 River Frontage Road, Silt, CO 81652 within 48 hours. If the TOC is lower than required or the cement sheath of poor quality, then within **48 hours** from running the CBL and prior to commencing fracturing operations, a CRVFO petroleum engineer shall be notified for remedial operations.  
  
A greater volume of cement may be required to meet the 200-foot cement coverage requirement for the Williams Fork Formation, Mesaverde Group. Evaluate the top of cement on the first cement job on the pad (Temperature Log). If cement is below 200 foot-cement coverage requirement, adjust cement volume to compensate for low TOC/cement coverage.
10. On the first well drilled on this pad, a triple combo open-hole log shall be run from the base of the surface borehole to surface and from TD to bottom of surface casing shoe. This log shall be in submitted within 48 hours in .las and .pdf format to CRVFO Petroleum Engineer or to Todd Sieber, Fluid Minerals Geologist, 2300 River Frontage Road, Silt, CO 81652. Contact Todd Sieber at 970-876-9000 or [asieber@blm.gov](mailto:asieber@blm.gov) for clarification.
11. Submit the (a) mud/drilling log (e.g. Pason disc), (b) driller's event log/operations summary report, (c) production test volumes, (d) directional survey, and (e) Pressure Integrity Test results within 30 days of completed operations (i.e. landing tubing) per 43 CRF 3160-9 (a). Contact the CRVFO petroleum engineer for clarification.
12. Prior to commencing fracturing operations, the production casing shall be tested to the maximum anticipated surface treating/fracture pressure and held for 15 minutes without a 2% leak-off. If leak-

off is found, the CRVFO petroleum engineer shall be notified within **24 hours** of the failed test, but prior to proceeding with fracturing operations. The test shall be charted and set to a time increment as to take up no less than a quarter of the chart per test. The chart shall be submitted with the well completion report.

13. During hydraulic frac operations, monitor the bradenhead/casing head pressures throughout the frac job. Any sharp rise in annular pressure (+/- 40 psi or greater) will terminate the frac operations in order to determine well/wellbore integrity. Notify the CRVFO petroleum engineer at 970-876-9049 (office) or 970-319-5837 (cell) **immediately**.
14. Submit a monthly report of operations or production per 43 CFR 3162.4-3 including any production from these wells in MCFPD, BOPD, BWPD with FTP/SITP until the completion report (Form 3160-4) is filed.
15. Per 43 CFR 3162.4-1(c), not later than the fifth 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 a case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed.

**APPENDIX B**

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

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**BLM RESPONSES TO PUBLIC COMMENTS  
Dejour Master Development Plan**

The BLM Colorado River Valley Field Office (CRVFO) received comments from State, County, and local government entities, environmental groups, and private citizens during the public scoping process for the Dejour Master Development Plan (DMDP). The comments are presented below, along with BLM's responses.

**LETTERS AND EMAILS FROM LOCAL CITIZENS (AUGUST 1 TO AUGUST 12, 2011)**

The BLM received letters or emails of support for the DMPD from the following local citizens:

Craig Abernathy	Kim Herwick	Mandy Rice
Classic Auto Body	Kirk Kancilra	Felipe Rodriguez
Christine Crowther	Lant Kitson	Vicki Schultz
Carrie Dice	Sue Fontus	Preston Seymour
Rordie Donelson	Lex Lively	John Slife
Stuart Dykstra	Kimberly Mannel	Tyler Terry
Sherry Fairchild	Paula McFarland	Jim Woolman
Brent Gendreau	Danni Mikesell	Karen Woolman
John Gorton	R.M. Gendrecea	LaVerne Wynia
Brenda Gracil	Herman Roach	

The BLM welcomes and appreciates comments by local citizens and is grateful to these individuals for their participation in the process.

**WILDERNESS WORKSHOP– LETTER FROM PETER HART (AUGUST 28, 2011)**

The comment letter received from Mr. Hart on behalf of Wilderness Workshop is attached in its entirety at the end of this appendix. The following are excerpts of the specific comments included in that letter.

**Comment 1:** *The Garfield Creek State Wildlife [Area] provides high wildlife value and was purchased to protect that value. In 1981 the Colorado Division of Wildlife (DOW) purchased the Garfield Creek State Wildlife Area (GCSWA), a large tract of some of the finest deer and elk habitat in Colorado. The Wildlife Area is just less than 13,200 acres set aside for mule deer, elk, and a host of other wildlife species. The Garfield Creek State Wildlife Area was established and continues to be managed as a complete ecosystem for game species. The area satisfies all seasonal habitat needs for deer and elk, from winter range at lower elevations and on sunnier aspects, to transitional range and summer range in the higher areas. This extraordinary variety of habitat types makes the GCSWA one of the few wildlife areas that can provide year round habitat for deer and elk.*

**Response:** The BLM recognizes the history and value of the GCSWA, as reflected by the inclusion of a No Surface Occupancy stipulation (GS-NSO-04) to prohibit surface-disturbing activities within the Garfield Creek and West Rifle Creek SWAs in the most recent land use plan, amended in the 1999 Oil & Gas Leasing & Development Record of Decision and Resource Management Plan (BLM 1999b).

**Comment 2:** *Leases issued within the Garfield Creek State Wildlife Area without NSOs violate the law. Section 302(a) of the Federal Land Policy and Management Act (FLPMA) of 1976 and Department of Interior (DOI) regulations indicate that leasing must conform to relevant land use plans. Here the applicable 1999 Glenwood Springs Resource Management Plan Amendment (RMPA) requires No*

*Surface Occupancy (NSO) stipulations on oil and gas leases issued within the GCSWA to protect wildlife habitat values for which the area was acquired by the State. Exceptions to this NSO requirement are available at the discretion of the administrative officer if special mitigation measures are developed in consultation with the DOW. Here, since no mitigation measures were developed in consultation with DOW prior to issuance of the lease, exceptions do not apply. Because lease COC 065531 was issued within the Garfield Creek State Wildlife Area without NSO stipulations required in the RMPA, the lease was issued in violation of the law.*

**Response:** The BLM acknowledges that it issued Federal lease COC65531 without attaching GS-NSO-04 and certain other stipulations to some portions of the lease where indicated by its land use plan (BLM 1999b). The BLM has concluded that issues of conformance with its land use plan could be resolved for the current project by requiring that activities on GCSWA lands overlying Federal lease COC65531 meet the exception criteria for GS-NSO-04. Under the land use plan, this consists of Dejour's developing a wildlife mitigation plan in consultation with CPW and submitting it for BLM approval. Consequently, as described in Section 1.4 of the attached EA, the BLM is deferring approval of the 15A Pad and associated facilities along the floor of the Garfield Creek valley until the exception criteria are met.

The other Federal lease incorporated into the Proposed Action—COC66370, which includes the proposed 21A Pad on BLM land and the proposed 21B and 22A pads on GCSWA lands atop Jolley Mesa—is subject to the stipulations listed in Table 2 of the EA. To qualify for an exception from stipulation GS-NSO-04 for the 21B and 22A pads and associated facilities, Dejour must also satisfy the exception criteria for these pads and associated facilities. The NSO does not apply to the 21A Pad on BLM land.

**Comment 3:** *Leases issued in violation of laws and regulations are void or voidable. An agency must act within authority granted by Congress and cannot issue leases in violation of laws or regulations. Courts have consistently found that leases issued in violation of a statute, like the National Environmental Policy Act or FLPMA, are either void or voidable. Leases issued in violation of laws and regulations cannot stand and DOI has general authority under the Mineral Leasing Act to unilaterally cancel on-shore leases issued contrary to the law. DOI regulations also give the agency authority to unilaterally cancel leases prior to production if they were "improperly issued." Here the ROD clearly requires application of NSO stipulations to leases issued within the GCSWA. Since lease COC65531 was issued within the Garfield Creek State Wildlife Area without an NSO stipulation, it is void or voidable.*

**Response:** See response to Comment 2.

**Comment 4:** *BLM must cancel the lease or supplement the record and consistently apply NSO stipulations to all areas within the Garfield Creek State Wildlife Area. We understand that BLM is trying to solve this problem. In May of 2010 the Deputy State Director issued a decision indicating that the lease was issued in error and would be cancelled unless the lessee signed an amended lease with the addition of NSO stipulations. That decision was appealed to the Interior Board of Land Appeals (IBLA) by the lessee and subsequently remanded to the BLM based on a scanty record and inconsistent application of stipulations in the amended lease. Importantly, though, consultation with DOW at this point will not cure the problem. While the RMPA requires leases in the GCSWA be issued with NSO stipulations unless the BLM can come up with "special mitigative measures developed in consultation with [Colorado Parks and Wildlife]." That consultation must occur prior to issuance of the lease.*

**Response:** See response to Comment 2. The BLM is working to resolve legal issues related to Federal lease COC65531. In the meantime, the BLM prepared the attached EA analyzing potential impacts from the Proposed Action. The BLM does not intend to authorize surface-disturbing activities or approve APDs for Federal lease COC65531 until legal issues around the lease have been resolved. This does not

apply to the 21A Pad on BLM land, or the 21B and 22A pads on GCSWA land, all of which would access Federal lease COC66370.

The BLM does not agree that exception criteria for lease stipulations, such as that associated with GS-NSO-04 (“special mitigative measures developed in consultation with [Colorado Parks and Wildlife]”), can be applied only in conjunction with leasing. Instead, the BLM believes that exception criteria specified in a lease stipulation may be applied to individual projects that meet the exception criteria in appropriate circumstances.

**Comment 5:** *Should BLM undertake analysis of this proposal, there are a number of existing, proposed, and reasonably foreseeable projects that must be analyzed along with the proposed project’s environmental impacts. Council on Environmental Quality (CEQ) regulations require federal agencies to consider “connected actions,” “similar actions,” and “cumulative actions” together with “direct” and “indirect” impacts. The CEQ regulations define similar actions as those that “have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.” The CEQ regulations also state when agencies ought to analyze such similar actions in a single impact statement. Agencies “should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives is to treat them in a single impact statement.”*

**Response:** The BLM is aware of this requirement and has included the types of analyses identified in the comment. We note, however, that like all GAPs and MDPs prepared by the CRVFO in conjunction with proposed oil and gas exploration and development, the EA is tiered to the EIS for the most recent land use plan, in this case the 1984 RMP as amended by the 1999 Record of Decision and Resource Management Plan (BLM 1999b).

**Comment 6:** *Existing programmatic analyses are inadequate. Because of the obvious inadequacies of the Glenwood EIS, the CRVFO has for a longtime been tiering to the 2006 Roan Plateau RMPA/EIS (Roan EIS) to justify ongoing development. That practice is inappropriate for a number of reasons. First, the Roan EIS explicitly excludes from its analysis the impacts of natural gas development occurring outside the Roan Plateau Planning Area (RPPA). In other words, that analysis is applicable only to a defined geography. In this case, as with many already approved projects, since this proposed Dejour Energy Corp. MDP is not within the RPPA, the Roan EIS is inapplicable.*

*Furthermore, the Roan EIS does not adequately analyze air quality impacts of oil and gas development. For example, that EIS fails to analyze potential impacts to several Class I airsheds of oil and gas development. It fails to use statutory baseline dates to determine compliance with Prevention of Significant Deterioration (PSD) increments. It fails to quantify ozone emissions from oil and gas development. And it fails to consider whether emissions would contribute to violation of National Ambient Air Quality Standards (NAAQS) for ozone.*

**Response:** The air impacts analysis presented in the DMDP at Section 3.2 is based not on the Roan modeling, but on the recent air quality modeling performed in connection with an RMP revision currently underway. The results of the model are presented in the Air Resources Technical Support Document (ARTSD) referenced in Section 3.2 and available on the BLM CRVFO web site. The recent modeling effort addressed the entirety of the oil-and-gas production area of the CRVFO area with a reasonable foreseeable development scenario and included a much larger number of oil and gas wells than the Roan Plateau RMPA/EIS. The analysis specifically addressed ozone with the use of photochemical grid modeling programs. The results of the modeling were similar to those for the earlier Roan modeling in that no potentially significant air quality impacts were projected for projects of the scale of the DMDP, individually and cumulatively. Additionally, the ARTSD and Section 3.2 of the DMDP document reflect

the application to new oil and gas developments of updated air quality mitigation measures that were not incorporated into the Roan Plateau RMPA/EIS.

The BLM disagrees with the comment regarding the appropriateness of BLM's reliance on the Roan Plateau RMPA/EIS for projects outside the RPPA. The BLM further disagrees with the characterization that the Roan EIS did not adequately address air quality impacts of oil and gas development.

**Comment 7:** *BLM should undertake an EIS to analyze potential impacts of this proposal as well as all connected, similar, and cumulative actions, and their direct and indirect environmental consequences. Tiering to stale programmatic analyses does not satisfy mandates of NEPA. Without any programmatic analysis to tier to, an EIS will be necessary to adequately assess potential impacts associated with this MDP—especially to adequately analyze potential air quality impacts.*

**Response:** The BLM disagrees with this conclusion. Although the current land use plan was completed in 1984, it has been amended on multiple occasions to address emerging issues, including plan amendments in 1991 and 1999 specific to oil and gas development. The CRVFO staff continually updates resource information, including a Geographic Information System (GIS) database, and maintains familiarity with on-the-ground conditions through a combination of periodic land health assessments and the steady flow of new projects requiring fieldwork and review of available information in conjunction with numerous EAs prepared each year. Consequently, our impact analyses and mitigation are not based on “stale” information but continually refined. Indeed, the air quality modeling to which the DMDP air impacts analysis refers was completed during late summer 2011.

**Comment 8:** *BLM must do a better job analyzing direct, indirect, and cumulative impacts of connected actions. For example, Bill Barrett Corporation recently applied for a Clean Air Act Title V Operating Permit from the Colorado Air Pollution Control Division for the Mamm Creek Compressor Station. Despite the fact that the compressor will process gas generated from federal wells, including wells on the Miller #10 pad, the EA for those wells undertaken by BLM did not consider additional impacts of a compressor station. In other words, BLM authorized well development with an EA that failed to take into account connected actions. It is not clear how prevalent these oversights are, but we believe they happen with some regularity.*

*There is existing and foreseeable oil and gas infrastructure in and around the area Dejour Energy Corp. has proposed to develop. For example there is existing and proposed development on Jolley Mesa and Gibson Gulch that is connected by infrastructure and proximate in distance. Gas gathering and water pipeline networks connect this proposed development with facilities owned and operated by Williams nearby. Williams, Bill Barrett Corp., and Orion [Antero], among others, have wells and operating facilities in the area. And there is substantial foreseeable development. The MDP also discusses centralized tank facilities where produced water will be hauled during production. This proposal must be analyzed together all other connected development and infrastructure to adequately account for impacts.*

*To ensure that BLM is adequately analyzing all connected actions and cumulative impacts, the agency should prepare a map of MDPs, pads and wells, roads, and associated infrastructure in the area for inclusion in any final environmental analysis. The agency cannot continue to analyze project proposals in a piecemeal fashion. Instead, the agency should begin publicly painting the bigger picture and holistically analyzing impacts of oil and gas development within the CRVFO.*

**Response:** The BLM has considered the cited oil and gas projects in the project vicinity in its cumulative impacts analysis. With respect to air impacts in general, previous responses above have noted that the DMDP air quality analysis was completed with reference to the recent air quality modeling ARTSD, which specifically included analyses of cumulative impacts from existing and reasonably foreseeable oil

and gas developments in the CRVFO area. The comment mentions a compressor facility for which Bill Barrett Corporation has applied to the State of Colorado for an air quality permit. The Mamm Creek Compressor Station is an existing facility on Fee lands. The need for the Title V permit application was triggered by the quantity of emissions and the stage of development that the facility has reached, not additional compression beyond that authorized by the State in 2007. Moreover, both the previous (Roan-related) and recent (RMP-related) air quality modeling for oil and gas activities included compressor emissions on a *pro-rata* (per-well) basis. Therefore, the compressor emissions have been accounted for.

**Comment 9:** *BLM must consider ozone-related impacts. Ozone is one of the most significant types of air pollution. Ozone is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOX) react in the atmosphere. Ozone causes a variety of adverse health impacts, including respiratory problems such as lung inflammation and asthma, and can even lead to premature death. Elevated ozone levels also injure vegetation and forest health, as well as wildlife, and cost agriculture hundreds of millions of dollars annually in reduced crop yields.*

**Response:** Ozone-related impacts analysis for the DMDP was addressed through an air quality analysis that used the recent modeling conducted in connection with the RMP revision currently underway. The modeling indicates that no violations of the Federal ozone standard are predicted for any alternative, including Alternative A (current management).

**Comment 10:** *BLM must analyze and consider potential impacts from benzene emissions, a known human carcinogen. Colorado estimates that oil and gas sources emit 67 percent of the benzene in Garfield County. That number is increasing as BLM approves oil and gas development in the area, but the agency has not adequately analyzed it. The agency cannot continue to ignore impacts resulting from activities that it approves.*

**Response:** The recent air quality modeling analysis conducted in connection with the RMP revision currently underway specifically addressed hazardous air pollutants (HAPs) associated with oil and gas projects, including BTEX (benzene, toluene, ethylbenzene, and xylenes), formaldehyde, and n-hexane. Emissions of HAPs were modeled for near-field analysis using conservative Alternative A emission rates likely to approximate those under current management. Short-term (1-hour) HAPs concentrations were compared to acute Reference Exposure Levels (RELs), defined as concentrations at or below which no adverse health effects are expected. No RELs are available for ethylbenzene and n-hexane; instead, the available Immediately Dangerous to Life or Health divided by 10 (IDLH/10) values were used. These values were determined by the National Institute for Occupational Safety and Health (NIOSH) and were obtained from USEPA's Air Toxics Database (USEPA 2005). The values approximate pollutant concentrations likely to produce mild effects during 1-hour exposures. All modeled HAP maximum 1-hour concentrations (with inclusion of background concentrations) are well below the REL or IDLH/10 reference concentrations. For most modeled HAPs, the maximum total concentrations are less than 0.5% of the applicable thresholds. However, benzene and formaldehyde maximum concentrations are approximately 13% to 27% of their respective RELs, well below the RELs

Additionally, long-term maximum potential exposures to HAPs and to diesel particulate matter (PM) were compared to Reference Concentrations for Chronic Inhalation (RfCs). An RfC is defined by USEPA as the daily inhalation concentration at which no long-term adverse health effects are expected. RfCs exist for both carcinogenic and non-carcinogenic effects on human health. Annual concentrations for each modeled HAP were compared directly to non-carcinogenic RfCs. For all HAPs except benzene and formaldehyde, the maximum total concentration is less than 7% of the RfC. The maximum modeled formaldehyde concentration is approximately 43% of its respective RfC.

Of the HAPs analyzed, only benzene and formaldehyde are suspected to be carcinogenic. RfCs for these HAPs are expressed as unit risk factors (URFs). Accepted methods for risk assessment were used to evaluate the incremental cancer risk for these pollutants. Based on the Superfund National Oil and Hazardous Substances Pollution Contingency Plan, a cancer risk range of one cancer in 1 million ( $10^{-6}$  risk) to 100 cancers in 1 million ( $10^{-4}$  risk) is generally acceptable. Cancer risks for each of the HAPs individually and for combined exposure to both HAPs for are within or below the acceptable range the most likely exposed individual (MLE) and the maximally exposed individual (MEI). For the MLE, an individual could encounter a maximum cancer risk due to benzene of up to 0.16 cancers in 1 million. The greatest predicted MLE risk due to formaldehyde is 0.00009 in 1 million. For the MEI, the model predicts a risk of up to 0.45 due to benzene exposure and up to 0.00026 due to formaldehyde exposure.

**Comment 11:** *BLM must consider impacts to [human-caused impairment to visibility] in Class I airsheds. BLM must consider any potential impacts to Class I airsheds. The Clean Air Act designates wilderness areas and national parks as “Class I” areas, and sets a national goal of avoiding any human-caused impairment of visibility there. Several Class I areas are located in Western Colorado, including the Black Canyon of the Gunnison National Park, Maroon Bells-Snowmass Wilderness Area, Flat Tops Wilderness Area, and West Elk Wilderness Area. Emissions from oil and gas development and other human activities have caused substantial adverse effects to air quality in these Class I areas. Any additional impacts must be analyzed and disclosed and BLM, as well as other federal agencies, must take affirmative steps to avoid further impairment and restore air quality in these areas.*

**Response:** The recent air quality modeling used in the DMPD air impacts assessment specifically addressed potential visibility impacts for several Class I areas, including Arches National Park, Eagles Nest Wilderness Area, Flat Tops Wilderness Area, Maroon Bells-Snowmass Wilderness Area, Mount Zirkel Wilderness Area, Rocky Mountain National Park, and Rawah Wilderness Area, as well as sensitive Class II areas. Based on the alternatives analyzed and their associated assumptions, the analysis found negligible impacts from the project-alone (either no or one day of decrease in visibility of 1 deciview or more, based on the BLM Daily Refined Visibility Analysis method).

**Comment 12:** *BLM must ensure compliance with Prevention of Significant Deterioration (PSD) requirements by aggregating interrelated and adjacent sources in any analysis. In this case, BLM must ensure that emissions from proposed gas wells are aggregated together with other interrelated and adjacent sources and/or other sources owned or under common control by Dejour and affiliates. This is the only way to ensure compliance with PSD regulations and the Colorado State Implementation Plan (SIP). The proposed wells and downstream compressor stations and/or other pollutant emitting activities are all interrelated, adjacent, and under common ownership or control. Furthermore, they are all part of the same industrial grouping. According to the Standard Industrial Classification Manual, producing natural gas wells and related facilities fall under Major Group 13, or “Oil and Gas Extraction.”*

**Response:** The recent air quality modeling analysis that was used in the air impacts analysis for the DMDP included a Prevention of Significant Deterioration (PSD) Class I and Class II increment analysis comparison. However, PSD increment comparisons performed under NEPA are provided for informational purposes only and are not regulatory PSD increment consumption analyses. Predicted concentrations were well below PSD increments for all pollutants and averaging times at Class I and sensitive Class II area receptors

**Comment 13:** *BLM should give personal notice of any draft or final EA or EIS to all parties who submitted comments and provide a meaningful opportunity for public review and comment prior to issuing a final decision.*

**Response:** The CRVFO's long-standing procedure for public scoping of EAs performed in conjunction with oil and gas MDPs, including the DMDP, is to publish the Proposed Action for public review and comment. The input from public reviewers is then incorporated into the EA. This process is consistent with NEPA.

**Comment 14:** *BLM must analyze impacts prior to authorizing development. The July 28, 2011 BLM issued press release notifying the public and soliciting comment on this proposal indicate that Dejour Energy Corp. intends to begin drilling in the fall of 2011. The MDP itself indicates that APDs have already been submitted to the CRVFO for 14 wells and that additional APDs are expected shortly. We are concerned that BLM intends to approve individual APDs prior to completing this MDP. Approval prior to analysis undermines the intent of NEPA, which aims to "insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. As well as undermining the intent of BLM policy on Master Development Plans which are intended to ensure "early planning, orderly development, and the cumulative effects analysis for all the APDs expected to be drilled by an operator in a developing field." BLM should wait until analysis is complete and the MDP is approved before authorizing any development in the area.*

**Response:** The concern described in the comment is unfounded. Under our process, we cannot and do not approve APDs until either (a) the underlying NEPA document has been finalized and approved or (b) a determination has been made that the APD qualifies for approval under one or more of the Categorical Exclusions (CXs) available under Section 390 of the Energy Policy Act of 2005.

**Comment 15:** *In addition to the aforementioned items, BLM must consider, analyze, and disclose:*

- *Greenhouse gas emissions and global warming contributions resulting from this project.*
- *Impacts to plant and wildlife species, including discussion of impacts to the Colorado Natural Heritage Program's Potential Conservation Area that overlaps with the proposed MDP. And analysis of impacts to a mule deer concentration area, a mule deer migration corridor, an elk winter concentration area, and wild turkey habitat. Importantly, the Mule Deer Foundation calls this some of the best mule deer habitat in the State.*
- *Any BLM analysis must consider T&E [threatened or endangered] and sensitive and special-status species.*
- *The BLM must consider both narrow and broad habitat impacts of this project and all connected, similar, and cumulative actions. More specifically the agency must consider habitat fragmentation resulting from this project along with other connected, similar, and cumulative projects in the area. The Wilderness Society recently put together a report with helpful guidance the BLM should consider in any such analysis. There is evidence that fragmentation resulting from oil and gas development may have significant long-term impacts on plants and wildlife and other public land resources.*
- *Finally, the agency must consider potential impacts to human health resulting from this proposal.*

**Response:** The BLM believes that it has addressed adequately the items listed in the comment. Climate change impacts and greenhouse gas emissions are discussed in Section 3.2 of the DMDP, which also addresses human health effects. Special status plants and wildlife are discussed in Section 3.17, and issues involving mule deer and elk are addressed in Section 3.23. The NHP's Potential Conservation Area (PCA) along Garfield Creek is located entirely outside and upstream from the portion of the DMDP along the Garfield Creek valley floor (i.e., the Section 15 pad and ancillary facilities). In addition, the BLM has available a variety of protections that could be added as conditions of approval for any future project components that could affect the riparian plant and animal communities in or near the PCA.

**Additional Question 1:** *The [Proposed Action] states that “Dejour may decide to build a surface pond to stage fresh water for drilling wells at three pads....” The document does not make it clear where a pond would be located. Nor does the document indicate what kind of approvals may be necessary. We would like answers to those questions.*

**Response:** The issue of a fresh-water pond is not fully defined. What is known is that (a) it would be located on private surface at a location to be specified by the private landowner for long-term ranching use after oil and gas development activities have been completed, and (b) it would be designed to conform to any State of Colorado requirements related to height of an earthen structure if the reservoir is constructed as an impoundment rather than an excavated pond. At this time, it is not fully known whether the pond would be excavated or impounded with an earthen structure across an existing swale. The BLM expects that, during the development phase, the fresh-water pond would be beneficial by reducing truck traffic for haulage of water. The BLM has also concluded that impacts to wildlife, surface waters, and other resources would be negligible regardless and unaffected by whether it is excavated or impounded.

**Additional Question 2:** *Potential impacts from workovers and recompletions must be explicitly analyzed in any environmental analysis. That includes everything from truck trips to rig emissions, and everything in between.*

**Response:** Comment noted. The air impacts analysis for the DMDP used the recent air quality modeling, which included emissions associated with recompletion and workover activities.

#### **COLORADO PARKS AND WILDLIFE – LETTER FROM J.T. ROMATZKE (AUGUST 28, 2011)**

The comment letter from Mr. Romatzke on behalf of Colorado Parks and Wildlife (CPW), formerly the Colorado Division of Wildlife (CDOW), is attached in its entirety at the end of this appendix. The following are excerpts of the specific comments included in that letter.

**Comment 1:** *One of the most critically important and valuable wildlife areas in western Colorado is the Garfield Creek State Wildlife Area (GCSWA). The wildlife area was acquired by CPW in the 1980s to accomplish several important wildlife goals. GCSWA represents some of the most important wildlife habitat in Garfield County—the best of the best and a “crown jewel.” Protection of this area is of the highest priority for CPW. While we absolutely prefer, in order to protect our investment in crucial wildlife resources, that no BLM oil and gas developments occur on Garfield Creek, we recognize that BLM owns and has leased the subsurface mineral rights. CPW is in the process of developing a surface use agreement (SUA) with Dejour Energy in order to minimize threats and impacts to our investment.*

**Response:** The BLM recognizes the history and value of the GCSWA, as reflected by the inclusion of a No Surface Occupancy stipulation (GS-NSO-04) to prohibit surface-disturbing activities within both the Garfield Creek and West Rifle Creek State Wildlife Areas in the 1999 Oil & Gas Leasing & Development Record of Decision and Resource Management Plan (BLM 1999b).

The BLM acknowledges that it issued Federal lease COC65531 without attaching GS-NSO-04 and certain other stipulations to some portions of the lease where indicated by its land use plan (BLM 1999b). The BLM has concluded that issues of conformance with its land use plan could be resolved for the current project by requiring that activities on GCSWA lands overlying Federal lease COC65531 meet the exception criteria for GS-NSO-04. Under the land use plan, this consists of Dejour’s developing a wildlife mitigation plan in consultation with CPW and submitting it for BLM approval. Consequently, as described in Section 1.4 of the attached EA, the BLM is deferring approval of the 15A Pad and associated facilities along the floor of the Garfield Creek valley until the exception criteria are met.

The other Federal lease incorporated into the Proposed Action—COC66370, which includes the proposed 21A Pad on BLM land and the proposed 21B and 22A pads on GCSWA lands atop Jolley Mesa—is subject to the stipulations listed in Table 2 of the EA. To qualify for an exception from stipulation GS-NSO-04 for the 21B and 22A pads and associated facilities, Dejour must also satisfy the exception criteria for these pads and associated facilities. The NSO does not apply to the 21A Pad on BLM land.

**Comment 2:** *Our comments on the DMDP focus on cumulative impacts and the amount of oil and gas development surrounding GCSWA that have not been accounted for in the proposed action submitted by Dejour. The proposed action is contiguous with five other BLM MDPs: Kokopelli, Gibson Gulch, Gibson Gulch II, Castle Springs, and North Castle Springs. The surface area encompassed by these five MDPs is well over 20,000 acres, most of which is mapped as mule deer critical winter range and elk concentration areas, and they make up a vital migration corridor between high elevation around Sunlight Peak and low elevation in the GCSWA.*

**Response:** Cumulative impacts of the cited MDPs are included in the attached EA at Section 4, which includes quantitative information on some of the metrics identified in the comment.

**Comment 3:** *The Dejour proposed action, in many areas of importance to BLM, and required for NEPA analysis in an EA, is ambiguous and lacking detail needed for transparent public knowledge, meaningful analysis, and disclosure of the cumulative effects to wildlife habitat and wildlife. For example, past development activities—well numbers, road miles, direct impacts, mitigation actions, and reclamation activities—have not been included for consideration and analysis in the proposed action.*

**Response:** While the DMDP includes a cumulative impacts assessment that addresses many of the items listed in the comment, some of the items—e.g., miles of roads, many of which were existing, area used by the public, will be used by private landowners for other purposes, and potentially will be retained over the long term by the BLM for hunting and other recreational access to public lands—cannot be as definitively attributed to individual or even cumulative projects from oil and gas developments in the wider area. In addition, quantification of the progress of wildlife mitigation and reclamation activities is premature for the cited projects near the DMDP area, because the original projects and subsequent phases are still active to varying degrees. The CPW has been an active participant in those other projects, particularly in terms of habitat treatments or other mitigation measures related to wildlife. Moreover, wildlife mitigation measures specific to portions of the Proposed Action on GCSWA lands have been specifically developed by Dejour in cooperation with CPW and, as has been conveyed to the BLM by CPW, an agreement has been made between CPW and Dejour in relation to wildlife mitigation.

**Comment 4:** *CPW would like to see the BLM analyze and include cumulative impacts to wildlife from this action by incorporating the five contiguous MDPs and their impacts to determine the true cumulative impacts to the landscape. Further, CPW would like to have BLM include the cumulative impact findings in the record of decision.*

**Response:** See response to Comment 2, above. We do not normally include impact analyses—cumulative or otherwise—in the Decision language accompanying FONSI for MDPs or other EAs. The impact analyses for individual resources and uses comprise the bulk of the EA document (Section 3 of the DMDP), while Section 4 presents the cumulative impacts analysis.

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August 28, 2011

Colorado River Valley Field Office  
2300 River Frontage Road  
Silt, CO 81652  
Via email: [gsfomail@co.blm.gov](mailto:gsfomail@co.blm.gov)

Dear Land Manager:

Subject: Dejour Energy Corp. MDP – DOI-BLM-CO-NO40-0068-EA

Please accept these scoping comments on the proposed Dejour Energy Corp. Master Development Plan (MDP).

- I. The Garfield Creek State Wildlife Refuge provides high wildlife value and was purchased to protect that value.

In 1981 the Colorado Division of Wildlife (DOW) purchased the Garfield Creek State Wildlife Area (GCSWA), a large tract of some of the finest deer and elk habitat in Colorado. The Wildlife Area is just less than 13,200 acres set aside for mule deer, elk and a host of other wildlife species.

The Garfield Creek State Wildlife Area was established and continues to be managed as a complete ecosystem for game species. The area satisfies all seasonal habitat needs for deer and elk, from winter range at lower elevations and on sunnier aspects, to transitional range and summer range in the higher areas. This extraordinary variety of habitat types makes the GCSWA one of the few wildlife areas that can provide year round habitat for deer and elk.

The Wildlife Area is comprised of two separate parcels of land. The lower parcel at 5,900 feet in elevation provides winter range for big game. The importance of winter range for these animals is increasing as oil and gas development continues to fragment and transform much of the Colorado River Valley into an industrial development zone. The higher parcel, known as the Baldy Creek Tract, climbs to over 10,000 feet in elevation and is lush with aspen groves and evergreens.

The Wildlife Area helps insure survival of deer and elk populations and provides valuable habitat for hundreds of other wildlife species. Wildlife includes: elk, deer,

golden eagles, golden mantled ground squirrels, turkeys, bobcats, blue grouse, cottontails, marmots, badgers, redtail foxes, redtail hawks, raccoons, weasels, bear and mountain lions. State wildlife areas are paid for by revenue from sportsmen and under state law, the DOW is required to manage state wildlife areas for the benefit of wildlife or for wildlife-related recreation. C.R.S. 33-1-102(42) (2010).

II. Leases issued within the Garfield Creek State Wildlife Area without NSOs violate the law.

Section 302(a) of the Federal Land Policy and Management Act (FLPMA) of 1976, 43 U.S.C. § 1732(a), and Department of Interior (DOI) regulations at 43 C.F.R. § 1610.5-3(a) indicate that leasing must conform to relevant land use plans.

Here the applicable 1999 Glenwood Springs Resource Management Plan Amendment (RMPA) requires No Surface Occupancy (NSO) stipulations on oil and gas leases issued within the GCSWA to protect wildlife habitat values for which the area was acquired by the State. NSO-4, Oil and Gas Leasing & Development ROD (1999) at 6. Exceptions to this NSO requirement are available at the discretion of the administrative officer if special mitigation measures are developed in consultation with the DOW. *Id.*, at 3, 6. Here, since no mitigation measures were developed in consultation with DOW prior to issuance of the lease, exceptions do not apply.

Because lease COC 065531 was issued within the Garfield Creek State Wildlife Area without NSO stipulations required in the RMPA, the lease was issued in violation of the law.

III. Leases issued in violation of laws and regulations are void or voidable.

An agency must act within authority granted by Congress and cannot issue leases in violation of laws or regulations. Courts have consistently found that leases issued in violation of a statute, like the National Environmental Policy Act or FLPMA, are either void or voidable. *See Northern Cheyenne Tribe v. Lujan*, 804 F.Supp 1281 1286-87 (D. Mont. 1991); *Sangre de Christo Development Inc. v. U.S.*, 932 F.2d 891, 896 (10<sup>th</sup> Cir. 1991).

Leases issued in violation of laws and regulations cannot stand and DOI has general authority under the Mineral Leasing Act to unilaterally cancel on-shore leases issued contrary to the law. *See Boesche v. Udall*, 373 U.S. 472, 479 (1973). DOI regulations also give the agency authority to unilaterally cancel leases prior to production if they were “improperly issued.” 43 C.F.R. §§ 3108.3(d), 3514.30.

Here the ROD clearly requires application of NSO stipulations to leases issued within the GCSWA. ROD, at 6. Since lease COC 065531 was issued within the Garfield Creek State Wildlife Area without an NSO stipulation, it is void or voidable.

IV. BLM must cancel the lease or supplement the record and consistently apply NSO stipulations to all areas within the Garfield Creek State Wildlife Area.

We understand that BLM is trying to solve this problem. In May of 2010 the Deputy State Director issued a decision indicating that the lease was issued in error and would be cancelled unless the lessee signed an amended lease with the addition of NSO stipulations. That decision was appealed to the Interior Board of Land Appeals (IBLA) by the lessee and subsequently remanded to the BLM based on a scanty record and inconsistent application of stipulations in the amended lease. IBLA 2010-175, at 15, 17.

Importantly, though, consultation with DOW at this point will not cure the problem. While the RMPA requires leases in the GCSWA be issued with NSO stipulations unless the BLM can come up with "special mitigative measures developed in consultation with the Colorado Division of Wildlife." ROD, at 6. That consultation must occur prior to issuance of the lease.

Here no "special mitigative measures" were developed in consultation with DOW as part of the leasing process. In fact, it was not until years after the lease was issued, when lessees began consulting with agencies about development, that BLM and DOW even became aware that the lease had been issued without NSO stipulations. IBLA 2010-175, at 7. In other words, this was an oversight rather than a conscious decision.

To cure this problem, BLM has two options. The agency's first option is to cancel the lease. The agency's second option is to cure the problems IBLA found with the Deputy State Director's decision—namely a scanty record and inconsistent application of the NSOs—and issue another decision applying NSOs as required by the 1999 RMPA/ROD.

Should the agency proceed with the second option, it must clearly catalogue the values at risk and reasons that the RMPA requires NSO within the Wildlife Area. The agency should consistently apply the NSO to all portions of the Wildlife Area. And the agency should make it clear that one of the reasons corrective action is necessary is to stave off potential litigation.

#### V. Scope of analysis.

Should BLM undertake analysis of this proposal, there are a number of existing, proposed, and reasonably foreseeable projects that must be analyzed along with the proposed project's environmental impacts. Council on Environmental Quality (CEQ) regulations require federal agencies to consider "connected actions," "similar actions," and "cumulative actions" together with "direct" and "indirect" impacts. 40 CFR § 1508.25. Connected actions are those that

1. "automatically trigger other actions which may require environmental impact statements,"
2. actions that "cannot or will not proceed unless other actions are taken previously or simultaneously," and,
3. actions that are "interdependent parts" of a larger action and "depend on the larger action for their justification."

40 CFR § 1508.25(a). The CEQ regulations define similar actions as those that "have similarities that provide a basis for evaluating their environmental consequences together,

such as common timing or geography.” *Id.* The CEQ regulations also state when agencies ought to analyze such similar actions in a single impact statement. (Agencies “should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives is to treat them in a single impact statement.” 40 CFR § 15.08.25.)

While federal agencies have considerable discretion in determining the scope of a NEPA document, there are situations where an agency must consider several related actions in a single NEPA document. In *Fritiofson v. Alexander*, the Fifth Circuit held that in a cumulative impact analysis, an agency should consider “(1) past and present actions without regard to whether they themselves triggered NEPA responsibilities and (2) future actions that are ‘reasonably foreseeable,’ even if they are not yet proposals and may never trigger NEPA-review requirements. 772 F.2d 1225, 1245 (5th Cir. 1985). The court stated:

Sections 1508.7 and 1508.27 require an analysis, when making the NEPA-threshold decision, as opposed to the EIS-scoping decision, whether it is “reasonable to anticipate cumulatively significant impacts” from the specific impacts of the proposed project when added to the impacts from “past, present, and reasonably foreseeable future actions,” which are “related” to the proposed project. The regulation does not limit the inquiry to the cumulative impacts that can be expected from proposed projects; rather, the inquiry also extends to the effects that can be anticipated from “reasonably foreseeable future actions.”

*Id.* at 1243; see also 42 U.S.C.S. §§ 4321-4347. For both EAs and EISs, BLM’s obligation to analyze impacts extends beyond the immediate impacts of the project at hand to include the cumulative impacts of the project, taken together with the impacts of existing, proposed, or reasonably foreseeable projects, on the environment. In order to comply with these mandates, the BLM may need to describe and analyze impacts beyond the immediate project area, beyond the borders of the Colorado River Valley Field Office (CRVFO), and beyond the list of known future gas development projects.

To ensure that combined impacts of separate activities do not escape consideration, NEPA requires BLM to consider cumulative environmental impacts in its environmental analyses. See *Davis v. Mineta*, 302 F.3d 1104, 1125 (10<sup>th</sup> Cir. 2002); see also *Grand Canyon Trust v. Federal Aviation Admin.*, 290 F.3d 339, 345-47 (D.C. Cir. 2002). NEPA’s regulations provide that “effects” includes ecological, aesthetic, and historic impacts, “whether direct, indirect, or cumulative.” 40 C.F.R. § 1508.8. “Cumulative impact,” in turn, is defined as:

the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Id., § 1508.7.

Based on these regulations, NEPA documents must provide useful analysis of past, present, and future actions. City of Carmel-By-The-Sea v. U.S. Dept. of Transp., 123 F.3d 1142, 1160 (9<sup>th</sup> Cir. 1997); Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 809-810 (9<sup>th</sup> Cir. 1999). As the D.C. Circuit has held, the fact that a project may result in even a small incremental increase in the overall impacts to a resource is meaningless if “there is no way to determine . . . whether [this increase] in addition to the other [impacts], will ‘significantly affect’ the quality of the human environment.” Grand Canyon Trust, 290 F.3d at 346.

It is established that the cumulative impacts analysis must include “some quantified or detailed information” since without such information it is not possible for the court or the public to be sure that the agency provided the hard look that is required of its review. Neighbors of Cuddy Mountain v. Forest Service, 137 F.3d 1372, 1379 (9<sup>th</sup> Cir. 1998). “The Circuit has also explained that this analysis is particularly important in an EA. That is because so many more EAs than EISs are prepared, and thus there is a higher risk of cumulative impacts resulting from the many smaller decisions.”<sup>1</sup>

#### VI. Existing programmatic analyses are inadequate.

The extent of authorized and existing oil and gas development in the CRVFO far exceeds what is analyzed in the 1999 Glenwood Springs Oil and Gas Leasing and Development Final Supplemental Environmental Impact Statement (Glenwood EIS). The Glenwood EIS analyzes the impacts from drilling only about 300 oil and gas wells in the resource area over a 20-year period. Furthermore, the Glenwood EIS fails to analyze a number of environmental impacts from oil and gas which have become significant (e.g., air emissions).

Because of the obvious inadequacies of the Glenwood EIS, the CRVFO has for a longtime been tiering to the 2006 Roan Plateau RMPA/EIS (Roan EIS) to justify ongoing development. That practice is inappropriate for a number of reasons. First, the Roan EIS explicitly excludes from its analysis the impacts of natural gas development occurring outside the Roan Plateau Planning Area (RPPA). In other words, that analysis is applicable only to a defined geography. In this case, as with many already approved projects, since this proposed Dejour Energy Corp. MDP is not within the RPPA, the Roan EIS is inapplicable.

Furthermore, the Roan EIS does not adequately analyze air quality impacts of oil and gas development. For example, that EIS fails to analyze potential impacts to several Class I airsheds of oil and gas development. It fails to use statutory baseline dates to determine compliance with Prevention of Significant Deterioration (PSD) increments. It fails to quantify ozone emissions from oil and gas development. And it fails to consider whether

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<sup>1</sup> Soda Mountain Wilderness Council v. Norton, (E.D. Cal. 2006), 2006 WL 769080; See Native Ecosystems Council v. Dombeck, 304 F.3d 886, 896 (9<sup>th</sup> Cir. 2002).

emissions would contribute to violation of National Ambient Air Quality Standards (NAAQS) for ozone.

Finally, the CRVFO has now used the Roan Plateau EIS to authorize more development than that document analyzes. The Roan Plateau EIS analyzes the impact of 1,570 federal wells over 20 years. BLM has used that EIS to approve 2,000 or more wells in recent years. The impacts of additional development have not been analyzed as required by NEPA. The Roan Plateau EIS is now stale and cannot be used to justify ongoing approvals. Therefore, BLM must undertake new and thorough NEPA analysis prior to authorizing additional development. That analysis must take into account all cumulative, connected and similar actions, as well as all direct, indirect and cumulative effects.

#### VII. BLM should prepare an EIS.

BLM should undertake an EIS to analyze potential impacts of this proposal as well as all connected, similar, and cumulative actions, and their direct and indirect environmental consequences. Tiering to stale programmatic analyses does not satisfy mandates of NEPA. Without any programmatic analysis to tier too, an EIS will be necessary to adequately assess potential impacts associated with this MDP—especially to adequately analyze potential air quality impacts.

#### VIII. BLM must do a better job analyzing impacts.

BLM must do a better job analyzing direct, indirect, and cumulative impacts of connected actions.<sup>2</sup> There is existing and foreseeable oil and gas infrastructure in and around the area Dejour Energy Corp. has proposed to develop. For example there is existing and proposed development on Jolley Mesa and Gibson Gulch that is connected by infrastructure and proximate in distance. Gas gathering and water pipeline networks connect this proposed development with facilities owned and operated by Williams nearby. MDP, at 6, 10. Williams, Bill Barret Corp., and Orion, among others, have wells and operating facilities in the area. And there is substantial foreseeable development. The MDP also discusses centralized tank facilities where produced water will be hauled during production. This proposal must be analyzed together all other connected development and infrastructure to adequately account for impacts.

To ensure that BLM is adequately analyzing all connected actions and cumulative impacts, the agency should prepare a map of MDPs, pads and wells, roads, and associated infrastructure in the area for inclusion in any final environmental analysis. The agency cannot continue to analyze project proposals in a piecemeal fashion. Instead, the agency should begin publicly painting the bigger picture and holistically analyzing impacts of oil and gas development within the CRVFO.

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<sup>2</sup> For example, Bill Barrett Corporation recently applied for a Clean Air Act Title V Operating Permit from the Colorado Air Pollution Control Division for the Mamm Creek Compressor Station. Despite the fact that the compressor will process gas generated from federal wells, including wells on the Miller #10 pad, the EA for those wells undertaken by BLM did not consider additional impacts of a compressor station. In other words, BLM authorized well development with an EA that failed to take into account connected actions. It is not clear how prevalent these oversights are, but we believe they happen with some regularity.

## IX. BLM must consider ozone-related impacts.

Any analysis must specifically consider ozone and ground level ozone. Ozone is one of the most significant types of air pollution. Ozone is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOX) react in the atmosphere. Ozone causes a variety of adverse health impacts, including respiratory problems such as lung inflammation and asthma, and can even lead to premature death. See 73 Fed. Reg. 16436, 16436 (Mar. 27, 2008). Elevated ozone levels also injure vegetation and forest health, as well as wildlife, and cost agriculture hundreds of millions of dollars annually in reduced crop yields.

Colorado estimates that oil and gas development is the largest source of ozone generating VOC pollution in the State. For example, oil and gas development accounts for more than 87 percent of all human-caused VOC emissions in Garfield County. The industry is also responsible for 72.5 percent of the human-caused NOX emissions there.<sup>3</sup> Oil and gas operations produce ozone-generating VOCs and NOX emissions from equipment such as condensate tanks, drill rig and compressor engines, glycol dehydrators, separators, and the increased vehicle traffic needed to construct, operate and maintain each well.

Under the Clean Air Act, the United States Environmental Protection Agency (EPA) sets national ambient air quality standards (NAAQSs). 42 U.S.C. §§ 7409, 7410. The EPA has established such NAAQSs for six air pollutants, including ozone, that can “endanger public health and welfare.” id. §§ 7408(a)(1)(A), 7409. The NAAQS for ozone is currently .075 parts per million (ppm) over an eight-hour period, but the EPA has proposed that the standard “instead be set at a lower level within the range of 0.060 to 0.070” ppm. 75 Fed. Reg. 2938, 2938 (Jan. 19, 2010). Garfield County monitoring has recorded ozone levels that may violate the NAAQS, especially if the standard is tightened. For example, a 2007 study recorded ozone levels that approached or exceeded .075 ppm.<sup>4</sup> BLM must analyze the impacts ozone resulting from oil and gas operations is having on the human environment.

## X. BLM must consider other hazardous air pollutants.

BLM must analyze and consider potential impacts from benzene emissions, a known human carcinogen.<sup>5</sup> Colorado estimates that oil and gas sources emit 67 percent of the benzene in Garfield County.<sup>6</sup> That number is increasing as BLM approves oil and gas

<sup>3</sup> [www.colorado.gov/airquality/inv\\_maps\\_2008.aspx](http://www.colorado.gov/airquality/inv_maps_2008.aspx) (last viewed June 9, 2011).

<sup>4</sup> Phillip Yates, Garfield County ozone levels are high, Glenwood Springs Post Independent, available at: <http://www.postindependent.com/article/20080318/VALLEYNEWS/207716530> (last viewed June 8, 2011); see also State of Colorado Technical Support Document for Recommended 8-Hour Ozone Designations at 65 (March 9, 2009), available at <http://www.cdphe.state.co.us/ap/ozone/OZDesignations.pdf> (last viewed June 13, 2011).

<sup>5</sup> Center for Disease Control Agency for Toxic Substances and Disease Registry, Toxic Substances Portal – Benzene (2007), available at <http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=38&tid=14> (last viewed June 8, 2011).

<sup>6</sup> [www.colorado.gov/airquality/inv\\_maps\\_2008.aspx](http://www.colorado.gov/airquality/inv_maps_2008.aspx) (last viewed June 9, 2011).

development in the area, but the agency has not adequately analyzed it. The agency cannot continue to ignore impacts resulting from activities that it approves.

XI. BLM must consider impacts to Class I airsheds.

BLM must consider any potential impacts to Class I airsheds. The Clean Air Act designates wilderness areas and national parks as "Class I" areas, and sets a national goal of avoiding any human-caused impairment of visibility there. 42 U.S.C. § 7491(a)(1). Several Class I areas are located in Western Colorado, including the Black Canyon of the Gunnison National Park, Maroon Bells-Snowmass Wilderness Area, Flat Tops Wilderness Area, and West Elk Wilderness Area. Emissions from oil and gas development and other human activities have caused substantial adverse effects to air quality in these Class I areas. Any additional impacts must be analyzed and disclosed and BLM, as well as other federal agencies, must take affirmative steps to avoid further impairment and restore air quality in these areas.

XII. BLM must ensure compliance with PSD requirements.

BLM must ensure compliance with Prevention of Significant Deterioration (PSD) requirements by aggregating interrelated and adjacent sources in any analysis. PSD regulations at 40 C.F.R. § 51.166(b)(5) define a stationary source as, "any building, structure, facility, or installation which emits or may emit a regulated [New Source Review] NSR pollutant." Regulations at 40 C.F.R. § 51.166(b)(6) further define "building, structure, facility, or installation" as "all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control)[.]" The regulations further state, "Pollutant emitting activities are considered part of the same industrial grouping if they belong to the same 'Major Group' (i.e., which have the same first two digit code) as described in the Standard Industrial Classification Manual[.]"

In this case, BLM must ensure that emissions from proposed gas wells are aggregated together with other interrelated and adjacent sources and/or other sources owned or under common control by Dejour and affiliates. This is the only way to ensure compliance with PSD regulations and the Colorado State Implementation Plan (SIP). The proposed wells and downstream compressor stations and/or other pollutant emitting activities are all interrelated, adjacent, and under common ownership or control. Furthermore, they are all part of the same industrial grouping. According to the Standard Industrial Classification Manual, producing natural gas wells and related facilities fall under Major Group 13, or "Oil and Gas Extraction."

With regard to the adjacency of these developments, although the EPA has noted that the distance associated with "adjacent" "must be considered on a case-by-case basis," the agency has noted that two pollutant emitting activities that are interdependent operations under common control can be considered adjacent when they are upwards of 20 miles apart or even greater. EPA noted that in relation to two interdependent facilities in Utah

21.5 miles apart, "the lengthy distance between the facilities 'is not an overriding factor that would prevent them from being considered a single source.'"

XIII. BLM must give adequate opportunities for public review and comment.

BLM should give personal notice of any draft or final EA or EIS to all parties who submitted comments and provide a meaningful opportunity for public review and comment prior to issuing a final decision.

XIV. BLM must analyze impacts prior to authorizing development.

The July 28, 2011 BLM issued press release notifying the public and soliciting comment on this proposal indicate that Dejour Energy Corp. intends to begin drilling in the fall of 2011. The MDP itself indicates that APDs have already been submitted to the CRVFO for 14 wells and that additional APDs are expected shortly. MDP, at 1.

We are concerned that BLM intends to approve individual APDs prior to completing this MDP. Approval prior to analysis undermines the intent of NEPA, which aims to "insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. 40 C.F.R. § 1500.1(b). As well as undermining the intent of BLM policy on Master Development Plans which are intended to ensure "early planning, orderly development, and the cumulative effects analysis for all the APDs expected to be drilled by an operator in a developing field."<sup>7</sup> BLM should wait until analysis is complete and the MDP is approved before authorizing any development in the area.

XV. Additional items for analysis.

In addition to the aforementioned items, BLM must consider, analyze, and disclose:

- Greenhouse gas emissions and global warming contributions resulting from this project.
- Impacts to plant and wildlife species, including discussion of impacts to the Colorado Natural Heritage Program's Potential Conservation Area that overlaps with the proposed MDP. And analysis of impacts to a mule deer concentration area, a mule deer migration corridor, an elk winter concentration area, and wild turkey habitat. Importantly, the Mule Deer Foundation calls this some of the best mule deer habitat in the State.<sup>8</sup>
- Any BLM analysis must consider T&E and sensitive and special-status species.
- The BLM must consider both narrow and broad habitat impacts of this project and all connected, similar, and cumulative actions. More specifically the agency must

<sup>7</sup> See Onshore Oil and Gas Operations; Federal and Indian Oil and Gas Leases; Onshore Oil and Gas Order Number 1, Approval of Operations, 72 Fed. Reg. 10308, 10335 (Mar. 7, 2007) (to be codified at 43 CFR pt. 3160).

<sup>8</sup> <http://www.muledeer.org/Projects/2007/GarfieldCreek.html>.

consider habitat fragmentation resulting from this project along with other connected, similar and cumulative projects in the area. The Wilderness Society recently put together a report with helpful guidance the BLM should consider in any such analysis.<sup>9</sup> There is evidence that fragmentation resulting from oil and gas development may have significant long-term impacts on plants and wildlife and other public land resources.<sup>10</sup>

- And, finally, the agency must consider potential impacts to human health resulting from this proposal.

#### XVI. Additional questions.

The MDP states that “Dejour may decide to build a surface pond to stage fresh water for drilling wells at three pads...” MDP, at 8. The document does not make it clear where a pond would be located. Nor does the document indicate what kind of approvals may be necessary. We would like answers to those questions.

Potential impacts from workovers and recompletions must be explicitly analyzed in any environmental analysis. That includes everything from truck trips to rig emissions, and everything in between.

Thanks,



Peter Hart, Conservation Analyst/Staff Attorney  
[peter@wildernessworkshop.org](mailto:peter@wildernessworkshop.org)  
970-963-3977

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<sup>9</sup> <http://wilderness.org/files/Oil-Gas-Fragmentation-Scoping-Brief.pdf>.

<sup>10</sup> See for example <http://wilderness.org/files/fragmenting-our-lands.pdf>.



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August 28, 2011

Bureau of Land Management  
Attn: Allen Crockett, Supervisory Natural Resource Specialist,  
Colorado River Valley Filed Office  
2300 River Frontage Road  
Silt, CO 81652



RE: Dejour Master Development Plan DOI-BLM-CO-N040-0068-EA

Dear Mr. Crockett:

The mission of the Colorado Division of Wildlife is to protect, preserve, enhance and manage wildlife and wildlife habitat for the use, benefit and enjoyment of the people of the state and visitors to the state. Consistent with that mission, CPW has acquired and managed state wildlife areas in important wildlife habitats around the state.

One of the most critically important and valuable wildlife areas in western Colorado is Garfield Creek State Wildlife Area (GCSWA). The wildlife area was acquired by CPW in the 1980s to accomplish several wildlife goals: to provide big game winter range south of the Colorado River and Interstate 70, to minimize game damage on surrounding private agricultural lands, to reduce traffic accidents on I-70 by minimizing herd disturbance and holding animals south of the Interstate, and to provide additional public land big game hunting access in Game Management Unit 42.

Garfield Creek State Wildlife Area represents some of the most important wildlife habitat in Garfield County. It is the best-of-the-best. It is a "crown jewel." Protection of this area is of the highest priority for CPW. While we absolutely prefer, in order to protect our investment in crucial wildlife resources, that no BLM oil and gas development occur on Garfield Creek, we recognize that BLM owns and has leased the sub-surface mineral rights.

The location, activities, and consequences of this proposed Dejour Master Development Plan fall squarely on the Colorado Parks and Wildlife owned and managed Garfield Creek State Wildlife Area. CPW is in the process of developing a surface use agreement (SUA) with Dejour Energy in order to minimize threats and impacts to our investment.

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**STATE OF COLORADO**

John W. Hickenlooper, Governor • Mike King, Executive Director, Department of Natural Resources  
Rick D. Cables, Director, Colorado Parks and Wildlife

Parks and Wildlife Commission: David R. Brougham • Gary Butterworth, Vice-Chair • Chris Castilian  
Dorothea Farris • Tim Glenn, Chair • Allan Jones • Bill Kane • Gaspar Perricone • Jim Pribyl • John Singletary  
Mark Smith, Secretary • Robert Streeter • Lenna Watson • Dean Wingfield  
Ex Officio Members: Mike King and John Salazar

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The SUA will address our concerns through a very specific and detailed level of permissions and prohibitions and resultant activities. While we can avoid, minimize and mitigate impacts to wildlife from oil and gas development on GCSWA, our ability to minimize cumulative impacts on adjacent land is more limited.

Our comments for the Dejour Master Development Plan DOI-BLM-CO-N040-0068-EA focus on cumulative impacts and the amount of oil and gas development surrounding GCSWA that have not been accounted for in the proposed action submitted by Dejour.

The Dejour proposed action is contiguous with 5 other BLM MDPs: the Kokopelli, Gibson Gulch, Gibson Gulch II, North Castle Springs, and Castle Springs development Plans. The surface area encompassed by these 5 MDPs is well over 20,000 acres, most of which is mapped as mule deer critical winter range and elk winter concentration area and they make up an vital elk migration corridor between high elevation around Sunlight Peak and low elevation on Garfield Creek State Wildlife Area.

CPW believes that minimizing human-wildlife impacts should be a clearly defined and fully developed component of the Dejour Environmental Assessment (EA). This belief is also supported by statements contained in the 1999 GRS ROD. Page 15 of the ROD clearly indicates that "The cumulative impacts of oil and gas development are discussed in the Final SEIS. However, the GAP environmental assessment will evaluate the effects of all past oil and gas development as well as planned actions within the geographic area, to determine the need for appropriate mitigation."

The Dejour proposed action; in many areas of importance to BLM, and required for EA analysis, is ambiguous and lacking detail needed for transparent public knowledge, meaningful analysis and disclosure of the cumulative effects to wildlife habitat and wildlife. For example, past development activities – well numbers, road miles, direct impacts, mitigation actions, reclamation activities have not been included for consideration and analysis in the Proposed Action.

CPW would like to see the BLM analyze and include the cumulative impacts to wildlife from this action by incorporating the 5 contiguous MDPs and their impacts to determine the true cumulative impacts to the landscape. Further CPW would like to have BLM include the cumulative impact findings in the record of decision.

The CP&W looks forward to a continued strong working relationship and dialogue on this important project. If you have any questions please do not hesitate to contact me at 970-255-6178.

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Sincerely,



JT Romatzke, Area Wildlife Manager

Cc. Ron Velarde, NW Regional Manager  
Dean Riggs, Assistant Regional Manager  
Will Spence, District Wildlife Manager

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