

**United States Department of the Interior  
Bureau of Land Management**

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**Preliminary Environmental Assessment  
DOI-BLM-CO-S010-2012-0061**

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**August 2012**

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**Tres Rios February 2013 Oil and Gas Lease Sale**

***Location:*** 12 parcels in Archuleta, Dolores, La Plata, Montezuma and San Miguel  
Counties, Colorado

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Tres Rios Field Office  
29211 Highway 184  
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970-882-6841



**Tres Rios February 2013 Oil and Gas Lease Sale**  
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## **1.0 PURPOSE & NEED**

### **Introduction**

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental effects of the Tres Rios Field Office February 2013 Oil and Gas Lease Sale. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” effects could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27.

An EA provides analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” effects following the analysis in the EA, then an EIS will be prepared for the project. If not, a FONSI and Decision Record (DR) may be signed for the EA. The decision can be an alternative as described or a combination of alternatives. A DR, including a FONSI, documents the rationale for why implementation of the selected alternative would not result in “significant” environmental effects beyond those already addressed in the San Juan/San Miguel Resource Management Plan of September, 1985 and the associated San Juan/San Miguel Resource Management Plan Amendment for Oil and Gas of October, 1991.

This chapter presents the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the proposed project. The BLM has considered a range of action alternatives to meet the purpose and need of the proposed project in a way that protects resource values. These alternatives are presented in Chapter 2. BLM also has analyzed a no-action alternative. The potential environmental effects or effects resulting from the implementation of each alternative considered in detail are analyzed in Chapter 4 for each of the identified issues.

### **1.1 Background**

Oil and gas leasing is a principal use of the public lands and current BLM policy encourages orderly development of leases and makes mineral resources available to meet national, regional, and local energy needs. This policy is based in various laws, including the Mineral Leasing Act of 1920 (MLA) and Section 102(a)(12), 103(1) of the Federal Land Policy and Management Act of 1976 (FLPMA). The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLRA) (Sec. 5102(a)(b)(1)(A)) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are nominated and available for leasing. Leases would be issued pursuant to 43 Code of Federal Regulations (CFR) Subpart 3100. Stipulations attached to leases serve as terms and conditions which provide protections to other resources on the parcel.

Colorado Bureau of Land Management (BLM) Instruction Memorandum No. CO-2010-027 provides guidance and direction for implementing Washington Office (WO) IM 2010-117, Oil

and Gas Leasing Reform-Land Use Planning and Parcel Review. It also provides guidance for parcel review, timeframes, leasing recommendations and attachments to be included with the Environmental Assessment (EA). This EA has been prepared in accordance with IM CO-2010-027 by the BLM Tres Rios Field Office (TRFO) to analyze leasing of twelve nominated parcels. It serves to verify conformance with the approved land use plan, provides the rationale for deferring or dropping parcels from a lease sale, and provides rationale for attaching lease stipulations to specific parcels.

This Preliminary EA will be available to the public, including the list of available lease parcels and stipulations, for a 30-day public comment period. After the end of the public comment period, the BLM will analyze the comments and make changes as necessary. The final parcel list with stipulations and notices will be available to the public through a Notice of Competitive Lease Sale (NCLS) which will start the protest period (30 days). The protest period ends 60 days before the scheduled lease sale. When possible, the Colorado BLM resolves any protests within the 60 days between the end of the protest period and the lease sale. If any changes are needed to the parcels or stipulations/notices, an erratum will be posted to the BLM Colorado leasing website to notify the public of the change.

The parcels will be available for sale at an oral auction tentatively scheduled for February 14, 2013. If a parcel of land is not purchased at the lease sale by competitive bidding, it may still be leased within two years after the initial offering. Following issuance, a lease may be held for ten years before expiration unless oil or gas is produced in paying quantities. A producing lease can be held indefinitely by economic production.

Lease sale notices are posted on the Colorado BLM website at: [http://www.blm.gov/nm/st/en/prog/energy/oil\\_and\\_gas/lease\\_sale\\_notices.html](http://www.blm.gov/nm/st/en/prog/energy/oil_and_gas/lease_sale_notices.html). On rare occasions, additional information obtained after the publication of the NCLS may result in withdrawal of certain parcels prior to the day of the lease sale.

### **1.1.1 Site Specific Analysis**

The act of leasing parcels would, in itself, have no direct effects on any resources in the field office. All indirect effects would be related to as yet undetermined future development of the leases. Even if lease parcels are leased, it remains unknown whether development would actually occur, and if so, where specific wells would be drilled and where facilities would be placed. This would not be determined until the BLM receives an Application for Permit to Drill (APD) in which detailed information about proposed wells and facilities would be provided for particular leases.

A lessee must submit an APD (Form 3160-3) to the BLM for approval and must possess an approved APD (i.e. a drilling permit) prior to any surface disturbance in preparation for drilling. Any stipulations attached to the standard lease form must be complied with before an APD may be approved. Following BLM approval of an APD, a lessee may produce oil and gas from the well in a manner approved by BLM in the drilling permit or subsequent sundry notices. The operator must notify the appropriate authorized officer 48 hours before starting any surface disturbing activity approved in the drilling permit.

Constraints on development of split estate parcels are determined by the BLM in consultation with the appropriate surface management agency or the private surface owner.

### **1.1.2 Location of Proposed Action**

The proposed February 2013 Oil and Gas Lease Sale parcel list includes twelve parcels within Tres Rios Field Office (TRFO) which are identified using the following parcel identification numbers: 6401, 6402, 6433, 6434, 6447, 6448, 6449, 6450, 6451, 6452, 6471, 6533. These twelve parcels comprise 12,175 acres, of which 3,369 acres are federal surface ownership, 7766 acres are private surface ownership, and 1040 acres are State of Colorado surface ownership. All parcels are entirely federally owned minerals. The parcels are located in Archuleta, Dolores, La Plata, Montezuma and San Miguel counties (Figure 1.1.2; See Attachment A for complete parcel legal descriptions, surface ownership acreage, and proposed stipulations).

Preliminary

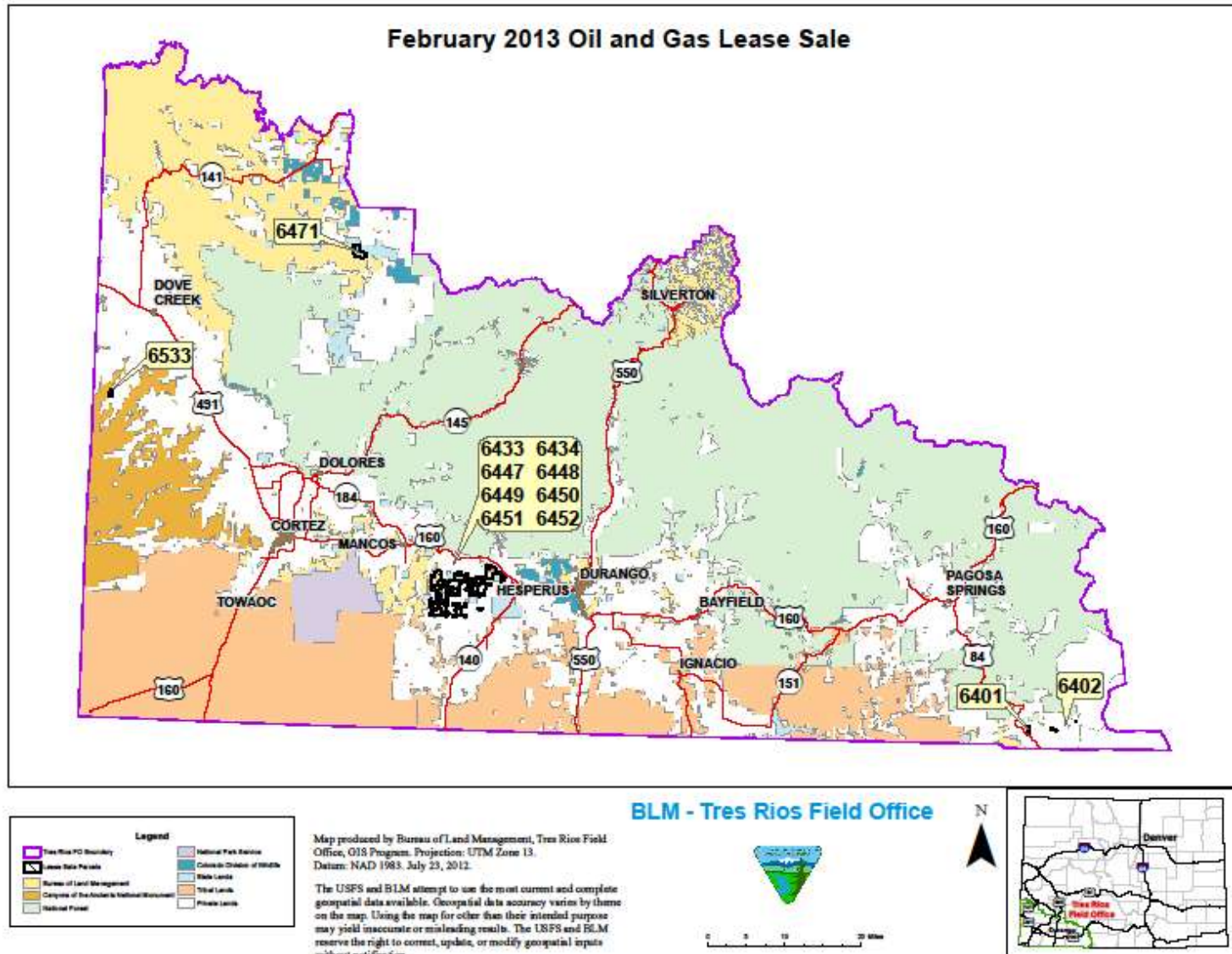


Figure 1.1.2 General Area Map

## **1.2 Need for the Proposed Action**

The need for the action is to fulfill BLM's responsibility under the Mineral Leasing Act (MLA), as amended, to promote the development of oil and gas on the public domain by responding to Expressions of Interest used to nominate new parcels for mineral lease. The MLA also establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior, where consistent with the FLPMA, the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, 42 USC 4321 et seq.), and other applicable laws, regulations, and policies.

## **1.3 Purpose(s) of the Proposed Action**

The purpose is to respond to the nomination of parcels for the competitive leasing process by private individuals or companies interested in exploring for and developing oil and gas resources on public lands.

## **1.4 Decision to be Made**

The BLM will decide whether or not to lease some or all of the twelve nominated parcels and, if so, under what stipulations.

## **1.5 Conformance with BLM Land Use Plan(s)**

- **Land Use Plan:** San Juan/San Miguel Planning Area Resource Management Plan (SJ/SM RMP).
- **Date Approved/Amended:** September 1985/ October 1991.

The proposed action and action alternatives analyzed in this EA are in conformance with the current resource management plan (RMP) and are specifically addressed in the following decision language:

### **MINERALS MANAGEMENT**

#### **Energy and Minerals Program**

BLM actively encourages and facilitates the development by private industry of public land mineral resources so that national and local needs are satisfied and economically and environmentally sound exploration, extraction, and reclamation practices are provided. SJ/SM RMP page 17.

#### **Resource Objectives**

**Oil and Gas Leasing.** As a general rule, public land is available for oil and gas leasing. SJ/SM RMP page 17.



## **Planned Actions**

Continue oil and gas leasing subject to environmental stipulations. SJ/SM RMP page 17.

**Clarification:** The 1991 Oil and Gas Amendment to the RMP contains both a written narrative and a map of areas not available for lease. The “No Lease” area description in the 1991 Amendment relates to the Wilderness Study Areas (WSA), and states that 103,152 acres of BLM-administered mineral estate under these WSAs will not be leased. In contrast, the “No Lease” area depicted on Map 2 of the 1991 RMP Amendment encompasses more acreage than what the narrative indicates. A potential conflict was identified when some of the current lease parcels appeared to be within the “No Lease” area depicted on Map 2.

The potential conflict was resolved after mapping the 103,152 acres designated as WSA using modern GIS technology and determining that none of the parcels currently nominated for lease are within the associated “No Lease” area boundary. At this time, all twelve parcels are being considered for leasing.

### **1.6 Relationship to Statutes, Regulations, or Other Plans**

- Federal Land Policy and Management Act (1976), as amended
- National Historic Preservation Act (1966), as amended
- Bald and Golden Eagle Protection Act (1962)
- Endangered Species Act (1973), as amended
- Migratory Bird Treaty Act (1918)
- Gunnison Sage-grouse Range-wide Conservation Plan (Colorado Division of Wildlife resources, 2005)
- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds
- MOU between the USDI BLM and USFWS to Promote the Conservation and Management of Migratory Birds (April 2012)
- MOU between the USDA, USDI, and EPA Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions Through the NEPA Process (2011)
- Oil and Gas Leasing Reform—Land Use Planning and Lease Parcel Reviews (BLM WO IM 2012-117)
- MOU between Colorado BLM and State of Colorado Oil and Gas Conservation Commission (COGCC) and USDI BLM concerning Oil and Gas permitting on BLM and NFS Lands in Colorado (BLM MOU CO-485)(July 2009)
- Interagency Agreement between the USDI Bureau of Reclamation (BOR) and the USDI BLM. Coordination and land use planning, land resource management, land conveyance and exchange, and cooperative services (1983)
- Standards for Public Land Health: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands.
- Code of Federal Regulations, Title 43, part 3101 section 1-2, Surface Use Rights.

These documents and their associated analysis and/or information are hereby incorporated by reference, based on their use and consideration by various authors of this EA.

## 1.7 Scoping & Identification of Issues

The proposed parcels were reviewed by an ID Team composed of resource specialists from the BLM TRFO. This team identified resources in the parcel areas which might be affected and considered potential effects using current office records and geographic information system (GIS) data. Information on the 2013 Lease Sale was posted to the TRFO BLM website, and letters with information about the parcels and proposed stipulations were sent to surface owners and posted online for a two week public scoping period starting on June 11, 2012. Sixteen comments were received and all timely and substantive comments were considered by the ID Team in identification of issues.

The results of the ID team review, including a list of all resource issues selected to be analyzed, are described below. The resource issues are analyzed in Chapter 3 of this EA.

In addition, this preliminary EA will be made available for public review and comment for 30 days beginning August 17, 2012. All timely and substantive comments provided within the comment period prior to the lease sale will be considered and incorporated in the EA as appropriate. Through initial scoping and outreach, the TRFO identified the following key issues were identified regarding the proposed action:

### IDENTIFICATION OF KEY ISSUES

#### Wildlife

- How will the proposed action affect habitat fragmentation, displacement, and reduction of wildlife species?
- How will the proposed action affect bird species, including raptors?

#### Threatened, Endangered and Sensitive Species

- Are there Threatened & Endangered species that will be negatively affected by the proposed action?
- Are sensitive species, including the Colorado River Cutthroat Trout, going to be negatively affected by the proposed action?
- Will the proposed action negatively affect Gunnison sage-grouse (*Centrocercus urophasianus*) habitat and active leks around the proposed action?
- Will the proposed action negatively affect Threatened and Endangered plant species, including Pagosa Skyrocket (*Ipomopsis polyantha*), on the lease parcels?

#### Soil & Water Resources

- How will the proposed action affect riparian areas that are relied upon by the Colorado River Cutthroat Trout for sustenance?
- Will hydraulic fracturing affect groundwater resources in the areas proposed for leasing?

- Will the proposed action increase erosion, runoff, and slope failures due to the steep slopes?

### **Cultural**

- How will the proposed action affect National Historic Landmarks and National Register Districts?
- How will the proposed action affect Traditional Cultural Properties?

### **Transportation**

- How will the proposed action increase traffic and degrade existing road quality in the area?

### **Air Quality and Climate**

- Will the proposed action affect air quality by increasing dust and other pollutants, or result in a changed climate of the area?

### **Socio-Economics**

- What are the possible effects of this lease sale on employment, personal income, and relative to local, state, and federal governments?

### **Recreation and Visual Resources**

- How will the proposed action affect the recreation value and visual integrity of the landscape in the area, especially the San Juan Scenic Byway?

### **Leasable Solid Minerals**

- How will the proposed action affect existing mines?

## **2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION**

### **2.1 Alternative A – Proposed Action**

The proposed February 2013 Oil and Gas Lease Sale parcel list includes twelve parcels within the management area of the TRFO and are identified using the following parcel numbers: 6401, 6402, 6433, 6434, 6447, 6448, 6449, 6450, 6451, 6452, 6471, 6533. These twelve parcels comprise 12,175 acres:

- 3,369 acres are federal surface ownership (approx. 28%)
- 7,766 acres are private surface ownership (approx. 64%)
- 1,040 acres are State of Colorado surface ownership (approx. 8%)

All parcels are entirely federally owned minerals.

The parcels are located in Archuleta, Dolores, La Plata, Montezuma and San Miguel counties. Stipulations are attached to these parcels to provide resource protections (Figure 2.2.2-2.2.5; See Attachment A for complete parcel legal descriptions, surface ownership acreage, and proposed stipulations for the Proposed Action).

# February 2013 Oil and Gas Lease Sale

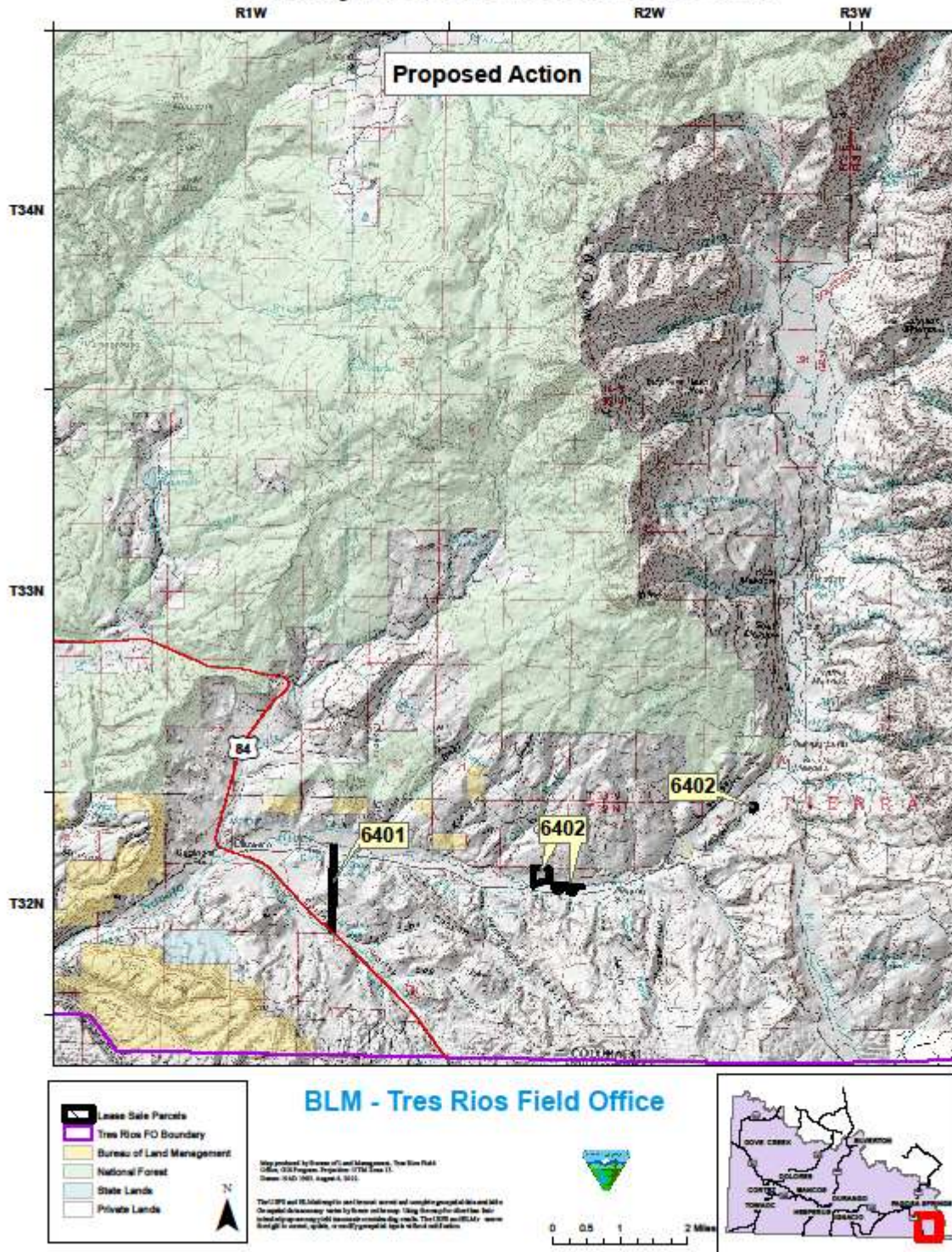


Figure 2.2.1 Chromo Area Parcels: 6401 and 6402

# February 2013 Oil and Gas Lease Sale

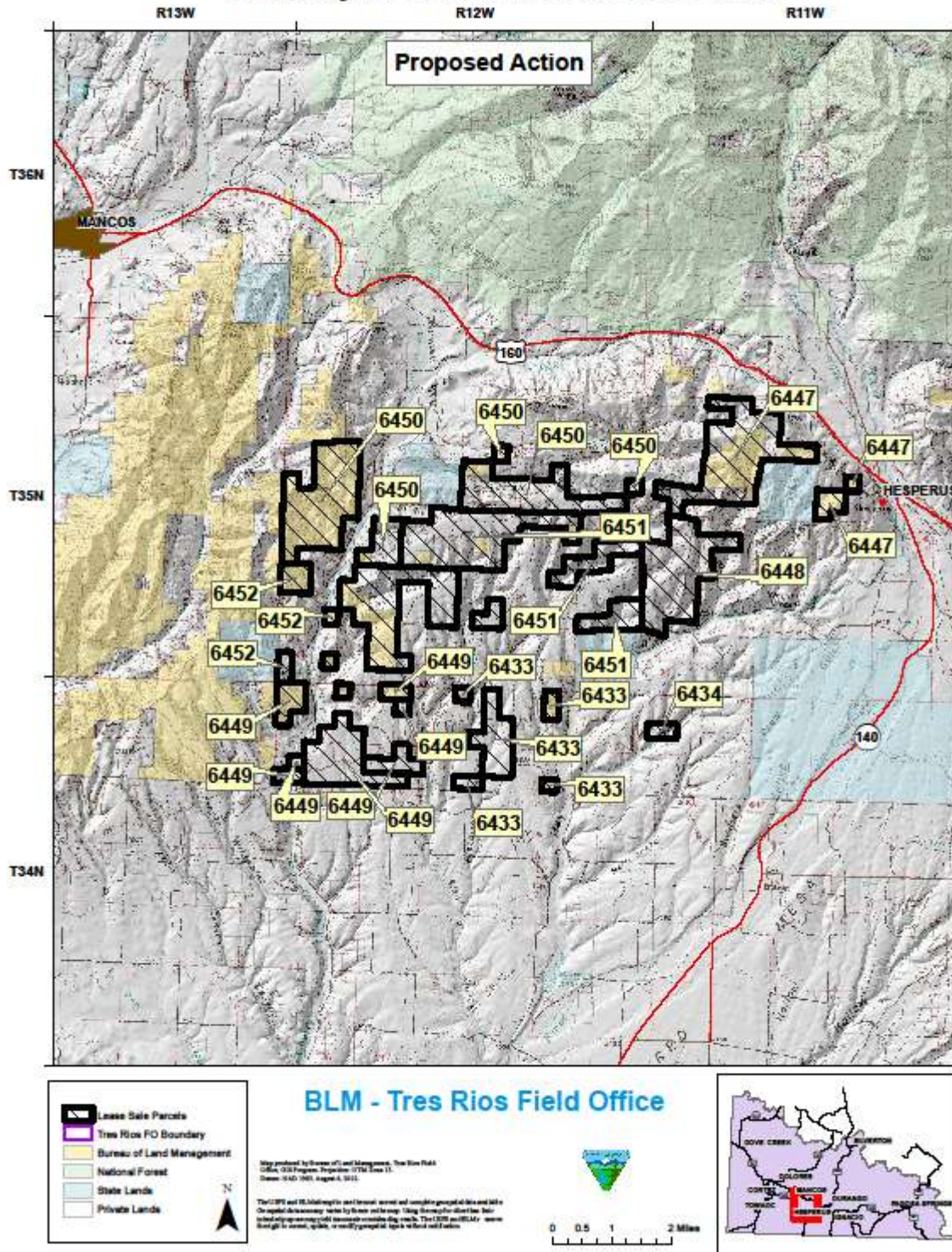


Figure 2.2.2 Hesperus Area Parcels: 6433, 6434, 6447, 6448, 6449, 6450, 6451, 6452

## February 2013 Oil and Gas Lease Sale

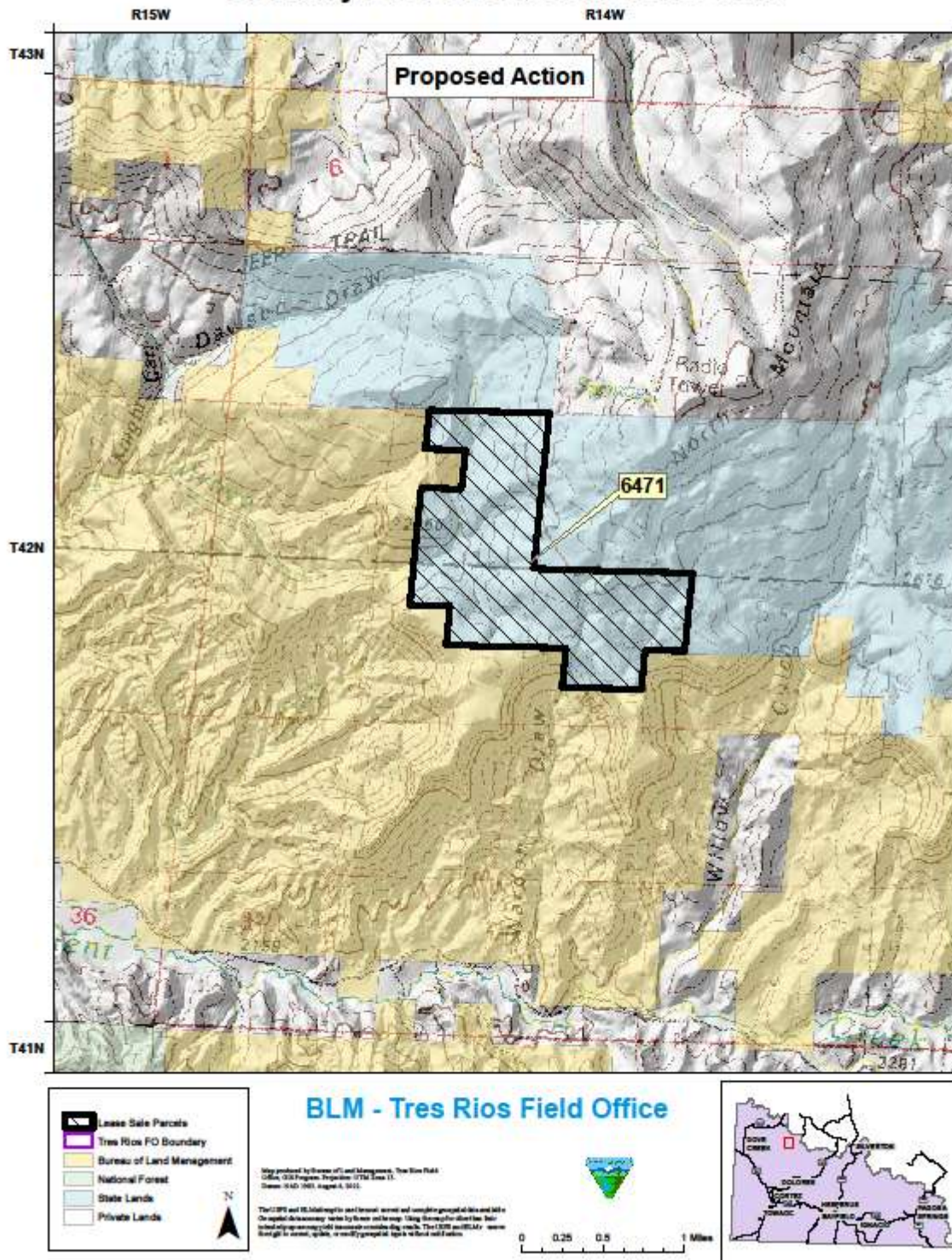


Figure 2.2.3 McKenna Peak Area Parcel: 6471

# February 2013 Oil and Gas Lease Sale

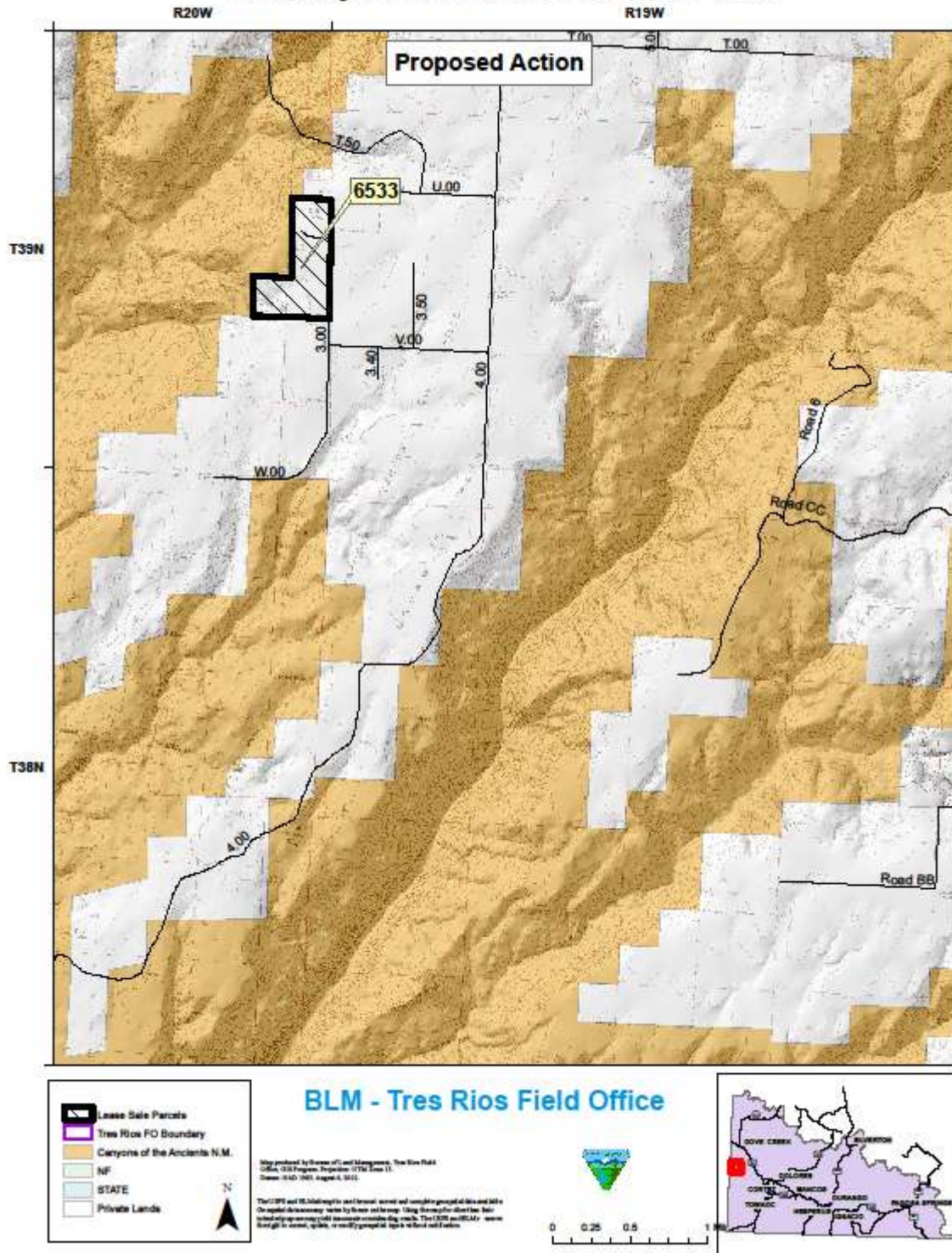


Figure 2.2.4 SW Dove Creek Area Parcel: 6533



## **2.2 Alternative B**

Alternative B includes the same lease parcels as the Proposed Action. However, 60 acres of Parcel 6447 would be deferred to protect the view-shed of the San Juan Scenic Byway (Figure 2.3, Attachment B). All other stipulations will be applied as in the Proposed Action (See Attachment C for complete parcel legal descriptions, surface ownership acreage, proposed stipulations, and lease notices for Alternative B). Because of the deferred 60 acres, the potential for development may be slightly reduced.

Preliminary

# February 2013 Oil and Gas Lease Sale

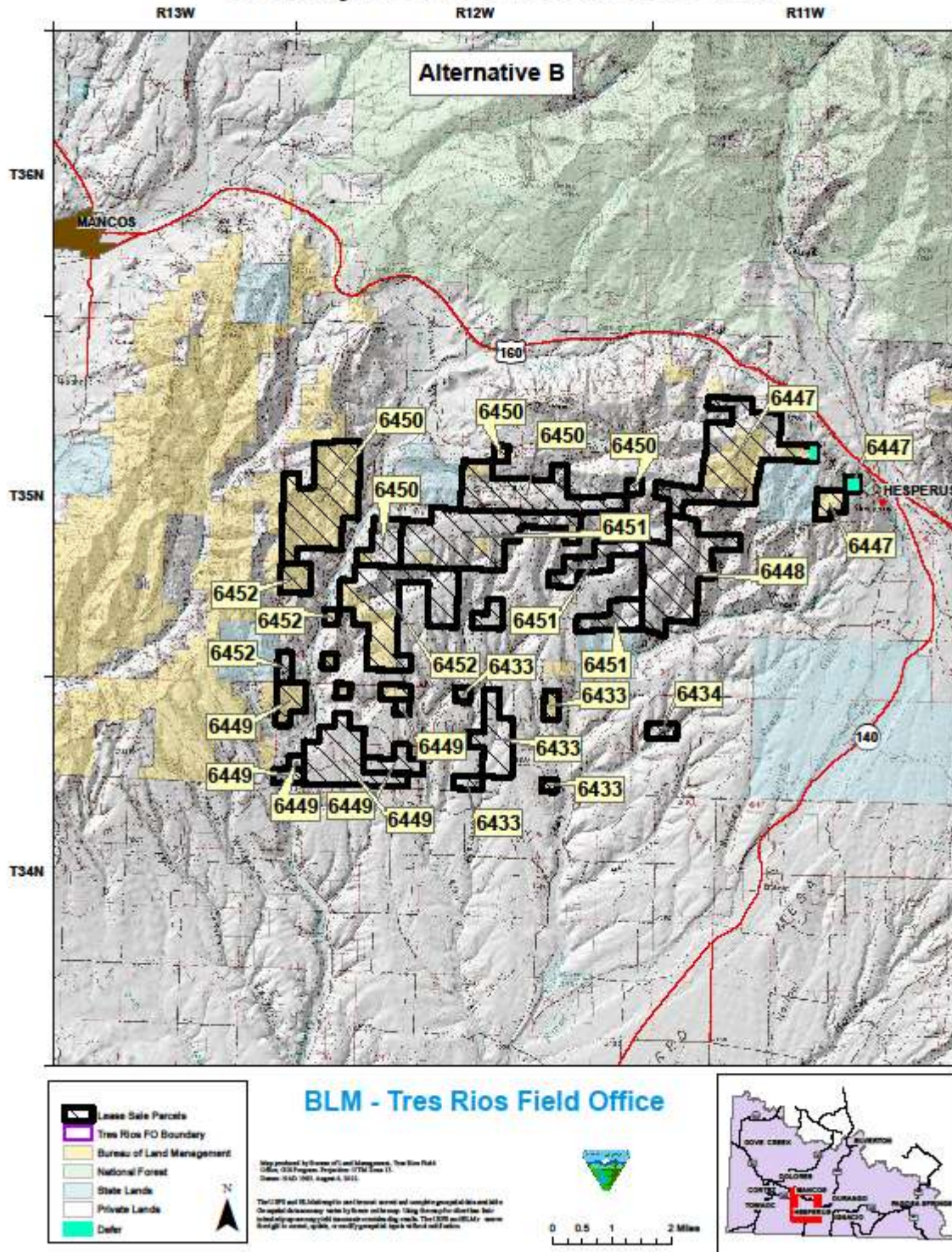


Figure 2.3. Alternative B-recommended deferral of 60 acres in Parcel 6447.

### 2.3 Alternative C – No Action

The BLM NEPA Handbook (H-1790-1) states that the No Action Alternative for externally initiated proposed actions means that the proposed action would not take place. In this case, the expression of interest to lease (parcel nomination) would be denied or rejected and the lease parcels would be removed from the February 2013 lease sale.

However, the parcels would remain available for inclusion in future lease sales. Surface management would remain the same and ongoing oil and gas development would continue on surrounding private, State, and Federal leases.

No mitigation measures would be required because no new oil and gas development would occur on the unleased lands. No rental or royalty payments would be made to the Federal government. It is not expected that demand for oil production would decrease. It is assumed that the continuing demand would be addressed through production elsewhere.

## 3.0 AFFECTED ENVIRONMENT

### 3.1 Introduction

This chapter presents the affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the affected area as presented in Chapter 1 of this EA. This chapter provides the baseline for comparison of effects described in Chapter 4.

### 3.2 General Setting

The parcels are located in Archuleta, Dolores, La Plata, Montezuma, and San Miguel counties in southwest Colorado. This area is known for a rich cultural heritage, diverse recreational opportunities, historic agricultural production, and mining properties.

#### 3.2.1 Resources/Issues Considered

Potential effects to resources/concerns were evaluated to determine if detailed analysis was necessary. Consideration of some of these elements is to ensure compliance with laws, statutes or Executive Orders that impose certain requirements upon all Federal actions. Other items are relevant to the management of public lands in general, and to the BLM Tres Rios Field Office in particular.

Determination*	Resource	Rationale for Determination
NI	Air Quality	Emission not authorized at leasing stage.
NP	Areas of Critical Environmental Concern	None present.
PI	Cultural Resources	Potentially present but will not be affected by lease sale.

<b>Determination*</b>	<b>Resource</b>	<b>Rationale for Determination</b>
NI	Greenhouse Gas Emissions	Emissions not authorized at leasing stage.
NP	Environmental Justice	No environmental justice populations reside in the project area
NP	Farmlands (Prime or Unique)	None identified by NRCS soil survey.
PI	Fish and Wildlife Excluding USFW Designated Species	Site specific analysis will occur if developed.
NP	Floodplains	None of 100 year and greater.
NI	Fuels/Fire Management	No concerns.
PI	Geology / Mineral Resources/Energy Production	Several proposed lease parcels overlap an existing coal lease.
PI	Hydrologic Conditions	Soils will be disturbed and timing of runoff.
NI	Invasive Species/Noxious Weeds	Will analyze impacts if actual development occurs.
PI	Transportation	Possible increase in traffic or new roads.
NI	Livestock Grazing	Will analyze impacts if actual development.
PI	Migratory Birds	Site specific analysis will occur if developed.
PI	Native American Religious Concerns	Potentially present but will not be impacted by lease sale.
PI	Rangeland Health Standards	Standards 1, 2 and 3 analyzed in EA.
PI	Socio-Economics	Possible indirect effects of this lease sale could lead to an increase in employment, personal income, and revenue to local, state, and federal governments.
PI	Soils	Soils will be disturbed and timing of runoff.
PI	Threatened, Endangered or Candidate Plant Species	Generalized analysis included in EA. Site-specific impacts will be analyzed if actual development occurs.
PI	Threatened, Endangered or Candidate Animal Species	Specific potential effects will be analyzed in detail if development occurs.
NI	Wastes (hazardous or solid)	Some analysis in the Soil and Water Resources section. More specific potential effects will be analyzed in detail if development occurs.
PI	Water Resources/Quality (drinking/surface/ground)	Soils will be disturbed and timing of runoff.
PI	Wetlands/Riparian Zones	Present but have No Surface Occupancy stipulations.
NP	Wild and Scenic Rivers	Resource not present in parcels.
NP	Wilderness/WSA	WSA near proposed action, but no overlap occurs.
NI	Woodland / Forestry	No concerns.

<b>Determination*</b>	<b>Resource</b>	<b>Rationale for Determination</b>
NI	Vegetation Excluding USFW Designated Species	Will analyze impacts if actual development occurs.
PI	Recreation/Visual Resources	Analysis found in EA for visuals. Recreation primarily based on proximity to Scenic Byway and Hesperus Ski Area.
NP	Wild Horses and Burros	No Wild Horses or Burros present in parcels.
NP	Areas with Wilderness Characteristics	Inventories for RMP have found no Wilderness Characteristics present in impact area.

**\*DETERMINATION OF STAFF:**

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

**Elements Not Brought Forward for Detailed Analysis**

The following issues were eliminated from analysis because they were not applicable to the lands considered (not present) in the proposed action. In addition, applicable leasing protective measures provided through the SJ/SM RMP, 1985 amended 1991 would eliminate any potential impact.

**Areas of Critical Environmental Concern**

There are no Areas of Critical Environmental Concern within the proposed action area.

**Farmlands (Prime or Unique)**

There are no Farmlands (Prime or Unique) as defined by 7 CFR 657.5 within the proposed action area.

**Forest Resources**

The proposed action is not anticipated to have a measurable impact to Forest Management.

**Wilderness and Wilderness Study Areas**

There is no designated wilderness within or adjacent to the proposed area. There are Wilderness Study Areas adjacent to, but not within, the lease parcels.

**Lands with Wilderness Characteristics**

No lands within the leased parcels were found to possess wilderness characteristics.

**3.3 Resources Brought Forward for Analysis**

**3.3.1 Wildlife**

**3.3.1.1 Wildlife – Migratory Birds**

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712 as supplemented) prohibits the unregulated "take" of most native bird species except gallinaceous birds. It covers direct

harm to birds rather than including harm to habitat. MBTA does not exempt unintentional take of birds. Proposals that appear to risk direct damage to birds or live eggs must show diligence in avoiding or reducing this risk. The lead enforcement agency, the U.S. Fish and Wildlife Service (USFWS), publishes a list, "Birds of Conservation Concern" (BCC), indicating that avoiding harm to the species on this list will contribute substantially to showing diligence to the requirements of the Migratory Bird Treaty Act. These are non-game migratory avian species that the USFWS has targeted as conservation priorities but are not currently federally listed as threatened or endangered. BCC species with potential to occur in the project area include, but are not limited to; Golden eagle (*Aquila chrysaetos*), gray vireo (*Vireo vicinior*), juniper titmouse (*Baeolophus ridgwayi*), plumbeous vireo (*Vireo plumbeus*), blue-gray gnatcatcher (*Polioptila caerulea*) and pinyon jay (*Gymnorhinus cyanocephalus*). Habitat on the proposed lands for leasing ranges from sage steppe habitat to pine forest with oak brush understory. This landscape diversity provides suitable habitat for a wide variety of key life function activities such as breeding, feeding and movement for these migratory bird species.

A Memorandum of Understanding (MOU) was recently signed between the U.S. Fish and Wildlife Service (USFWS) and the BLM outlining a collaborative approach to promote the conservation of migratory bird populations (4/12/10). The MOU states that BLM should evaluate the effects of actions on migratory birds during the NEPA process and identify where agency actions may have a measurable negative effect on migratory bird populations. The focus of this evaluation should be on species of concern, priority habitats, and key risk factors.

**Table 3.1** shows the full list of BCC species found in the Tres Rios Field office. Species impacted refers to a measurable negative effect on bird populations from the proposed action, and is addressed in greater detail in the discussion of effects from the proposed action alternative.

**Table 3.1 USFWS Birds of Conservation Concern**

<b>Species</b>	<b>Habitat Present In Project Area?</b>	<b>Species Impacted?</b>
American Bald eagle	<b>Yes</b>	<b>No</b>
American bittern	<b>No</b>	<b>No</b>
Brewer's sparrow	<b>Yes</b>	<b>No</b>
Brown-capped rosy-finch	<b>No</b>	<b>No</b>
Cassin's finch	<b>No</b>	<b>No</b>
Ferruginous hawk (SC)	<b>Foraging habitat (winter only)</b>	<b>No</b>
Flammulated owl	<b>No</b>	<b>No</b>
Golden eagle	<b>Yes</b>	<b>No</b>
Grace's warbler	<b>No</b>	<b>No</b>
Gray vireo (BLM only)	<b>Yes</b>	<b>No</b>
Gunnison sage grouse (SC)	<b>Possible</b>	<b>No</b>
Juniper titmouse	<b>Yes</b>	<b>No</b>
Lewis' woodpecker	<b>No</b>	<b>No</b>
Peregrine falcon (SC)	<b>Yes</b>	<b>No</b>
Prairie falcon	<b>Yes</b>	<b>No</b>
Pinyon jay	<b>Yes</b>	<b>No</b>
Southwest willow flycatcher	<b>No</b>	<b>No</b>
Western burrowing owl (ST)	<b>No</b>	<b>No</b>

Yellow-billed cuckoo (BLM only)	No	No
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### 3.3.1.2 Wildlife – Terrestrial

There are numerous and diverse terrestrial wildlife species that may occur in the analysis area. Mammals that may be within the lease parcels area include: red and gray fox (*Vulpes spp.*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), badger (*Taxidea taxus*), desert shrew (*Notiosorex crawfordi*) possibly the Merriam’s shrew (*Sorex merriami*), black-tailed jackrabbit (*Lepus californicus*), desert and mountain cottontail (*Sylvilagus spp.*), chipmunks (*Tamias spp.*), ground squirrels (*Sciuridae spp.*), woodrats (*Neotoma spp.*), mule deer (*Odocoileus hemionus*), elk (*Cervus Canadensis*), several species of mice (*Peromyscus spp.*), and the ringtail (*Bassariscus astutus*) (Fitzgerald 1994, pers. observations). Although all of the species are important members of native communities and ecosystems, most are common and have wide distributions within the state, region, and field office.

Several of the lease parcels are within or near important big game use areas including migratory routes, production areas and important winter range that provides forage for elk and deer throughout the winter months. Though leasing is not anticipated to compromise these important life functions for big game species, they will be addressed in greater detail in the discussion of effects from the proposed action alternative.

### 3.3.1.3 Wildlife – Aquatic

Several parcels are adjacent to or contain perennial streams which would provide potential habitat for aquatic wildlife. Additionally, these aquatic habitats provide food, cover and shelter for a variety of mammal, bird, and amphibian and reptile species common to southwest Colorado. Although all of the species are important members of native communities and ecosystems, most are common and have wide distributions within the state, region and field office (See Threatened, Endangered and Sensitive Species section for aquatic TES species).

The diversion of water for use due to oil and gas development could cause water depletions to occur downstream into the Colorado River, affecting federally listed fish species. In July 2008, BLM prepared a Programmatic Biological Assessment (PBA) that addresses water depleting activities in the Colorado River Basin. In response to BLM’s PBA, the USFWS issued a Programmatic Biological Opinion (PBO) (#ES/GJ-6-CO-08-F-0010) on February 25, 2009, which determined that water depletions from the Colorado River Basin resulting from BLM actions described in the PBO are not likely to jeopardize the continued existence of the Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*) or result in the destruction or adverse modification of their critical habitat. These threatened, endangered and sensitive fish species are addressed in the next section. The PBO addresses internal and external BLM projects including impoundments, diversions, water wells, pipelines, and spring developments. The USFWS determined that projects that fit under the umbrella of the PBA would avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletion effects to the Upper Colorado River Basin if they deplete relatively small amounts of water (less than 100 AF) and BLM makes a one-time

contribution to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) in the amount equal to the average annual acre-feet depleted by each project. The PBO instructed BLM to make an annual payment to the National Fish and Wildlife Foundation (NFWF) to cover all BLM authorized actions that result in water depletions. Refer to the mitigation section relating to stock ponds and the USFWS programmatic Biological Opinion.

### 3.3.2 Threatened, Endangered and Sensitive species

#### 3.3.2.1 Wildlife – Threatened, Endangered and Sensitive species

Analyzing and disclosing the effects of the proposed action to federally listed species is needed to comply with the Endangered Species Act of 1973 (16 U.S.C.1531 et seq.), as amended; BLM manual 6840 direction for special status species management; and the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C.4321 et seq.), as amended. For the reasons discussed below, the potential future development of the lease parcels is not expected to result in a requirement to consult with the US Fish and Wildlife Service (Section 7, Endangered Species Act).

There is no habitat for the boreal toad (*Bufo boreas*), a candidate species, in the proposed analysis area. The yellow-billed cuckoo (*Coccyzus americanus*), a candidate species, relies on cottonwood galleries within riparian areas. There are no documented observations and no mapped habitat for the yellow-billed cuckoo in the project area so no further analysis will be conducted. This project also falls outside of mapped habitat for the New Mexico Jumping mouse (*Zapus hudsonius luteus*) and no individuals of this species are known to occur within the project area so no further analysis will be conducted.

The Canada Lynx (*Lynx canadensis*) is a threatened species that has been successfully re-introduced to Southwest Colorado and is known to occur within the TRFO management area. The areas proposed for leasing are not in any mapped Lynx analysis units (LAU's) and are outside of suitable lynx habitat. Although there may be areas in the proposed leasing area that are used for travel by lynx, potential future development of lease parcels is not expected to have an effect to this species.

**Table 3.3.2.1. Federally listed T&E and Candidate species**

Federally Listed Species	Status	Habitat Present In Project Area?	Species Affected?
<b>Mammals</b>			
New Mexico jumping mouse	Candidate	No	No
Canada lynx	Threatened	No	No
<b>Birds</b>			
Southwestern willow flycatcher	Endangered	Yes	No
Western yellow-billed cuckoo	Candidate	No	No
Mexican spotted owl	Threatened	Yes	No



Gunnison sage grouse	Candidate	Yes	No
<b>Fish</b>			
Bonytail	Endangered	No	No
Colorado pikeminnow	Endangered	No	No
Razorback sucker	Endangered	No	No
Greenback cutthroat trout	Threatened	No	No
Humpback chub	Endangered	No	No

**Table 3.3.2.2 Colorado Bureau of Land Management sensitive fish, plant, and wildlife species**

Species	Habitat Present In Project Area?	Species Impacted?
<b>Mammals</b>		
Allen's big-eared bat	Yes	No
Big free-tailed bat	No	No
Fringed myotis	Yes	No
Spotted bat	Yes	No
Townsend's big-eared bat	Yes	No
Desert Bighorn Sheep	No	No
New Mexico Meadow Jumping Mouse	No	No
Gunnison's Prairie Dog	No	No
<b>Birds</b>		
American Bald Eagle	Yes	No
American peregrine Falcon	Yes	No
Ferruginous hawk	Winter Foraging	No
Western Burrowing Owl	No	No
Colombian sharp-tailed grouse	No	No
Northern goshawk	No	No
White-faced ibis	No	No
<b>Fish and Herpetofauna</b>		
Bluehead sucker	Possible	No
Colorado River cutthroat trout	No	No
Flannelmouth sucker	Possible	No
Roundtail chub	Possible	No
Desert spiny lizard	Yes	No
Longnose leopard lizard	Yes	No
Canyon treefrog	No	No
Northern leopard frog	No	No
<b>Insects</b>		
Great basin silverspot butterfly	No	No

### 3.3.2.2 Threatened, Endangered, and Sensitive Species – Plants

Federally listed threatened, endangered or candidate plant species that could potentially occur or have potential habitat in the vicinity of these parcels include the Pagosa skyrocket (*Ipomopsis polyantha*) and the Schmoll milkvetch (*Astragalus schmolliae*). *Ipomopsis polyantha* is currently listed as endangered and *Astragalus schmolliae* is currently a candidate for listing.

Habitat for four BLM and one Forest Service (FS) sensitive plant species could potentially occur in the vicinity of lease parcels, including potential habitat for Pagosa Bladderpod (*Lesquerella pruinosa*), Lone Mesa snakeweed (*Gutierrezia elegans*), Cushion Bladderpod (*Physaria pulvinata*), Ripley milkvetch (*Astragalus ripleyi*), and Naturita milkvetch (*Astragalus naturitensis*). Table 3.3.2.3 below illustrates which parcels contain potential habitat for special status species and which species may be present.

**Table 3.3.2.3 Potential Special Status Plant Species in Proposed Parcels.**

Parcel #	6401	6402	6433	6434	6447	6448	6449	6450	6451	6452	6471	6533
<b>Federally Listed Species</b>												
Pagosa skyrocket ( <i>Ipomopsis polyantha</i> ), Endangered	X											
Schmoll milkvetch ( <i>Astragalus schmolliae</i> ), Candidate			X	X	X	X	X	X	X	X		
<b>BLM (FS) Sensitive Species</b>												
Pagosa Bladderpod ( <i>Lesquerella pruinosa</i> )			X	X	X	X	X	X	X	X		
Lone Mesa Snakeweed ( <i>Gutierrezia elegans</i> )			X	X	X	X	X	X	X	X		
Cushion Bladderpod ( <i>Physaria pulvinata</i> )			X	X	X	X	X	X	X	X		
Ripley Milkvetch ( <i>Astragalus ripleyi</i> )			X	X	X	X	X	X	X	X		
Naturita Milkvetch ( <i>Astragalus naturitensis</i> )												X

### 3.3.3 Soil and Water Resources

#### 3.3.3.1 Soil and Water Resources – Surface Geology/Soils

All lease parcels occur within the physiographic province of the Colorado Plateau. The Colorado Plateau largely consists of thick horizontal beds of limestone, sandstone, siltstone, and shale that were laid down in shallow marine waters. The climate of the plateau is generally arid which facilitates the process of erosion; thus, the plateau is also made up of distinctive erosional features such as mesas, cuestas, rock terraces, retreating escarpments, canyons and dry washes. In some parts of the plateau volcanic necks and buttes are abundant.

The Chromo area lease parcels, #6401 and #6402, are largely located in Quaternary alluvium which is drained by the Navajo River. Quaternary alluvium consists of silt, sand, and gravel in stream valleys and floodplains. Some of the parcel is located on Mancos shale, cretaceous marine clay shale with thin platy beds of limestone and calcareous sandstone.

The Hesperus area lease parcel is located mostly on Cliffhouse sandstone. The Cliffhouse sandstone is thick fine- to medium-grained cross-bedded sandstone approximately 400 feet thick

that includes some shale. Other geologic units in the parcel are the Menefee Formation, Point Lookout sandstone, and Mancos shale. The Menefee Formation is nonmarine and consists of sandstone, claystone, shale, coal seams, and ironstone and limestone concretions. Point Lookout sandstone is massive sandstone with some alternating thin beds of sandstone and shale in its lower part.

The McKenna Peak area lease parcel, #6471, predominantly consists of the Mesa Verde Group, which is comprised of Cliffhouse sandstone, the Menefee Formation, and Point Lookout sandstone. There is a small amount of Mancos shale and Quaternary eolian deposits.

The Southwest Dove Creek area parcel, #6533, is located on approximately equal amounts of the Dakota and Burro Canyon Formations and Quaternary eolian deposits. The Dakota and Burro Canyon Formations are comprised of quartzitic sandstone and conglomerate sandstone with minor amounts of claystone, siltstone, shale, and mudstone.

The Chromo area lease parcel is dominated by the Herm-Echolake complex soil map unit (SMU). This SMU consists of slope alluvium derived from shale. It occurs on hills of 3 to 10% slope. Another predominant SMU within the lease parcel is the Vigil very gravelly loamy fine sand. This SMU also consists of slope alluvium derived from shale and occurs on hill landforms but its slope ranges from 3 to 35%. Hazard of erosion on roads and trails for the Herm-Echolake complex is moderate. Hazard of erosion on roads and trails for the Vigil SMU is severe and thus poorly suited for natural surface roads. Surface runoff for both SMUs is high.

**Table 3.3.3.1.1: Soil Classifications for Chromo Area**

Soil Classification	Acres
Herm-Echolake complex, 3 to 10 percent slopes	32
Vigil very gravelly loamy fine sand, 0 to 3 percent slopes	17
Carracas clay loam, 3 to 35 percent slopes	11

The Hesperus area lease parcel is dominated by the Archuleta-Sanchez complex SMU. This SMU consists of residuum weathered from interbedded sandstone and shale. It occurs on mountainsides, ridges, and hills of 12 to 65% slope. Another predominant SMU within the lease parcel is the Lazear-Rock outcrop complex. This SMU is residuum and/or slope alluvium derived from sandstone and shale. Slopes range from 12 to 65%. Approximately 36% of the Hesperus area lease parcels have greater than 40% slope and 57% has greater than 25% slope. Hazard of erosion on roads and trails for both SMUs is severe and thus poorly suited for natural surface roads. Surface runoff for both SMUs is very high.

**Table 3.3.3.1.2: Soil Classifications for the Hesperus Area**

Soil Classification	Acres
Archuleta-Sanchez complex, 12 to 65 percent slopes	3,894
Lazear-Rock outcrop complex, 12 to 65 percent slopes	1,554
Zau stony loam, 3 to 9 percent slopes	1,403

The McKenna Peak area lease parcel is dominated by the Leaps-Hofly loams SMU. This SMU consists of slope alluvium derived from sandstone and shale. It occurs on mountainside slopes

and mesas with 5 to 40% slopes. Hazard of erosion on roads and trails is moderate. Suitability for natural surface roads is poor. Surface runoff is very high.

**Table 1.3.3.1.3: Soil Classifications for McKenna Peak Area**

Soil Classification	Acres
Leaps-Hofly loams, 5 to 40 percent slopes	471
Lillylands loam, 15 to 50 percent slopes	192
Ryman loam, warm, 2 to 20 percent slopes	135

The Southwest Dove Creek area lease parcel is dominated by the Wetherill loam SMU. This SMU consists of eolian deposits derived from sandstone. It occurs on hills and mesas with 3-6% slopes. Hazard of erosion on roads and trails is moderate. It is moderately suited for natural surface roads. Surface runoff is high.

**Table 3.3.3.1.2: Soil Classifications for Southwest Dove Creek Area**

Soil Classification	Acres
Wetherill loam, 3 to 6 percent slopes	116
Romberg-Crosscan-Rock outcrop complex, 25 to 80 percent slopes	27
Gladel-Pulpit complex, 3 to 9 percent slopes	20

A review of soil mapping units within the entire proposed lease area did not yield any soils identified in the Draft Land Management Plan as prone to surface erosion and landslides. However, landslides have historically occurred to the north of the Hesperus area lease parcels and landslide deposits make up the very eastern edge of parcel 6450.

### **3.3.3.2 Soil and Water Resources – Floodplains, Wetlands, and Riparian Zones**

The Chromo area lease parcel is located within the Navajo River watershed. The major drainage within this watershed is the Navajo River, a perennial river that runs southwest into the San Juan River. The Hesperus lease parcels are located within the Headwaters La Plata watershed. The La Plata River is the main river within the watershed. It is a perennial river that runs south into the San Juan River. The McKenna Peak area parcel is located within the Disappointment watershed. The major river for the Disappointment watershed is Disappointment Creek. Disappointment Creek is a combination of ephemeral, intermittent, and perennial reaches. It drains west to the Dolores River. The Southwest Dove Creek parcel is located within the Cross Canyon watershed. Cross Canyon is the major drainage and is similar to Disappointment Creek in that it is a combination of ephemeral, intermittent, and perennial reaches. Cross Canyon is tributary to Montezuma Creek which is tributary to the San Juan River. All drainages that intersect the lease parcels are tributary to the upper Colorado River Basin via the San Juan or Dolores Rivers. Floodplains and riparian habitat exist on the larger order perennial stream reaches. Intermittent reaches, depending upon channel type, are also likely to have associated floodplains and riparian zones. Ephemeral reaches due to their infrequent flows are not likely to have significant floodplains or riparian areas. Lentic standing water represented as seeps and/or springs, wetlands, or lakes are not present within the lease parcel areas.

### **3.3.3.3 Soil and Water Resources – Surface Water Quality**

The Chromo area lease parcel is located within water quality control stream segment 1 of the “San Juan River” Basin (CDPHE-WQCD, June 2010, Regulation No. 34). Stream segment 1 is defined as the mainstem of the Navajo River and the Little Navajo River, including all wetlands, tributaries, lakes and reservoirs, from the boundary of the South San Juan Wilderness Area to the Colorado/New Mexico border except for specific listings in Segment 3. Beneficial use classifications include Aquatic Life Cold 1, Recreation E, Water Supply, and Agriculture. The Chromo area lease parcel is located immediately adjacent to Navajo Creek.

The Hesperus area lease parcels are located within water quality control stream segment 3a of the “La Plata River, Mancos River, McElmo Creek, and San Juan River in Montezuma County and Dolores County” basin (CDPHE-WQCD, June 2010, Regulation No. 34). Stream segment 3a is defined as all tributaries to the La Plata River, including all wetlands, lakes and reservoirs, from the Hay Gulch diversions south of Hesperus to the Southern Ute Indian Reservation boundary. More specifically, the Hesperus lease parcels are located near Deadman Gulch, West and East Alkali Gulch, and Hay Gulch, all of which are tributary to Cherry Creek which is tributary to the La Plata River. Beneficial use classifications include Aquatic Life Warm 2, Recreation N, and Agriculture. All streams in this segment are use-protected. A use-protected designation allows for some water quality degradation as long as parameters associated with use classifications continue to meet State water quality standards.

The McKenna Peak lease area parcel is located within water quality control stream segment 3a of the “Lower Dolores River” basin (CDPHE-WQCD, June 2011, Regulation No. 35). Stream segment 3a is defined as all tributaries to the Dolores River, including all lakes, reservoirs and wetlands, from the bridge at Bradfield Ranch (Forest Route 505, near Montezuma/Dolores County Line) to the Colorado/Utah border, except for specific listings in Segments 3b, 4 and 5. More specifically, the McKenna Peak lease area parcel is located at the headwaters of Salt Arroyo and Warden Draw, tributaries to Disappointment Creek. Beneficial use classifications include Aquatic Life Warm 2, Recreation E, and Agriculture. All stream segments are use protected.

The Southwest Dove Creek area parcel is located within water quality control stream segment 10a of the “La Plata River, Mancos River, McElmo Creek, and San Juan River in Montezuma County and Dolores County” basin (CDPHE-WQCD, June 2011, Regulation No. 34). Stream segment 10a is defined as all tributaries to the San Juan River in Montezuma and Dolores Counties, including all wetlands, lakes and reservoirs, except for the specific listings in Segments 2 through 8b and Segments 10b and 11. More specifically, the Southwest Dove Creek area parcel is located near Squaw Canyon. Beneficial use classifications include Aquatic Life Warm 2, Recreation E, and Agriculture. All stream segments are use protected.

In association with designated beneficial uses, there are numeric and/or narrative standards associated with the surface waters in Colorado. Numeric standards include physical, biological, inorganic and metal parameters. The salinity standard applicable to Colorado’s surface waters is a unique numeric standard that is defined in the document *Proposed Water Quality Standards for Salinity including Numeric Criteria and Plan of Implementation for Salinity Control, Colorado River System, June 1975*. The standard requires that water characteristics in the headwaters of the Colorado River are such that a total dissolved solid (TDS) value of 723 mg/L can be

maintained below Hoover Dam. The temperature standard for the San Juan and Dolores River Basins is a narrative standard that states that temperatures must maintain a normal pattern of diurnal and seasonal fluctuations with no abrupt changes. In addition to these standards, the Colorado Water Quality Control Commission (CDPHE-WQCD, June 2011, Regulation No. 31) has included a narrative statement for all surface waters that states all water (except in wetlands and/or except where authorized by approved permits, certificates, or plans of operation) shall be free from substances attributable to human caused point or non-point source discharges in amounts, concentrations, or combinations that can settle to form bottom deposits detrimental to the beneficial uses (this would include the accumulation of fine sediments); are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life; and, produce a predominance of undesirable aquatic life. These are often referred to as the “free from” standards.

Stream segments that are not fully supporting their designated beneficial uses (by exceeding the one or more of the numeric or narrative standards) are defined as impaired and placed on the State’s 303(d) List. Cherry Creek within the Hesperus area parcel is listed as impaired for iron. In addition to the 303(d) List of Impaired Waters, there is a Monitoring and Evaluation (M&E) List (CDPHE-WQCD, March 2012, Regulation No. 93), which identifies water bodies that are suspect of water quality problems, but uncertainty exists regarding several factors, such as reliability of the data. The Navajo River is listed on the M&E for E. Coli, Cherry Creek is listed for copper, and Disappointment Creek is listed for Selenium and E. Coli.

Disappointment Creek has been sampled for salinity concentrations by the BLM. Results of this sampling indicate that salinity concentrations can be high in Disappointment Creek but due to the wording of the salinity standard, it cannot be determined if the salinity concentration in Disappointment Creek exceeds the standard. For more information about salinity concentrations in Disappointment Creek refer to the *Upper Disappointment Valley Salinity and Erosion Control Monitoring Project* report by Weber and Jensen.

Table 3.3.3.3 identifies stream classifications and water quality standards for all segments affected by the four lease parcel areas.

**Table 3.3.3.3: Summary of Water Quality Information**

Lease Area	Stream Segment	Basin	Use Protection	Beneficial Use Classifications	303(d) list	M&E list
Chromo (Parcel 6401 and 6402)	1	San Juan	No	Aquatic Life Cold 1 Recreation E Water Supply Agriculture	None	E. Coli in Navajo River
Hesperus (Parcels 6433, 6434, 6447, 6448, 6449, 6450, 6451 and 6452)	3a	La Plata River, Mancos River, McElmo Creek, and San Juan River in	Yes	Aquatic Life Warm 2 Recreation N Agriculture	Iron in Cherry Creek	Copper in Cherry Creek

		Montezuma County and Dolores County				
McKenna Peak (Parcel 6471)	3a	Lower Dolores River	Yes	Aquatic Life Warm 2 Recreation E Agriculture	None	Selenium, E. Coli in Disappointment Creek
Southwest Dove Creek (Parcel 6533)	10a	La Plata River, Mancos River, McElmo Creek, and San Juan River in Montezuma County and Dolores County	Yes	Aquatic Life Warm 2 Recreation E Agriculture	None	None

### 3.3.3.4 Soil and Water Resources – Groundwater Quality

All lease parcels fall within the Colorado Plateaus aquifer which covers an area of approximately 110,000 square miles. The Colorado Plateaus aquifer is contained in a thick sequence of poorly to well-consolidated conglomerate, sandstone, siltstone, and shale. Relatively minor amounts of volcanic rocks, carbonate rocks, and evaporite deposits are also present. Structural deformation, faulting, and lateral changes in the lithology of the rocks have produced a complex sequence of water-yielding layers. In addition to the Colorado Plateau aquifer are surficial aquifers that occur primarily at shallow depth in unconsolidated sediments along parts of major river valleys.

The Colorado Plateaus Aquifer is made up of four smaller aquifers, the Uinta-Animas, the Mesa Verde, the Dakota-Glen, and the Coconino-De Chelly. The general composition of the aquifers is moderately to well-consolidated sedimentary rocks ranging from Permian to Tertiary. All but the Chromo area lease parcels are located within the Dakota-Glen aquifer. The Chromo area lease parcel is located within the Uinta-Animas aquifer.

The Dakota-Glen Aquifer covers most of the Colorado Plateau aquifers region and is split into several basins with their own unique characteristics. The rocks that make up this aquifer are late Cretaceous to Triassic in age. There are four areas of permeable rock that are then referred to as the Dakota aquifer, the Morrison aquifer, the Entrada aquifer, and the Glen Canyon aquifer. These four aquifers are considered one unit however because they are confined from all of the other principal aquifers in the region.

The Uinta-Animas aquifer spans northwestern Colorado, eastern Utah, and northwestern New Mexico. There are three basins that make up this particular aquifer: the Uinta basin in Utah, the Piceance basin in Colorado, and the San Juan basin in New Mexico. The aquifer is composed of lower Tertiary sandstones, conglomerates, and siltstones. The thickness of the aquifer varies in

each basin and generally increases from the margins in. The average thickness ranges from 500 feet in the Uinta basin to 3,500 feet in the San Juan basin.

Ground water is the primary water source for seventy-five percent of the public water supply systems in Colorado (CDPHE-WQCD, November 2009, Regulation No. 41). There are approximately 825,000 people in Colorado that rely either wholly or partially on ground water. Ground water is principally used for the public water supply and agricultural use. Water quality standards for groundwater were adopted in 1987. Since that time approximately 50 groundwater locations have been assigned use classifications and site specific water quality standards. For those areas that do not have assigned use classifications and standards there are standards that apply for certain toxic organic pollutants and radioactive materials. All lease parcels occur within areas that have not been assigned use classifications or standards. Therefore, they are subject only to the general statewide standards.

The statewide standards are that groundwater shall be free from pollutants not specifically identified by the State which alone or in combination with other substances are in concentrations shown to be (a) carcinogenic, mutagenic, teratogenic, or toxic to human beings, and/or (b) a danger to the public health, safety, or welfare. For all other radioactive materials and organic pollutants that may be present, they shall be maintained at the lowest practical level. That practical level may be the existing ambient quality or the criteria set forth by the State, whichever is less restrictive. At the present time, the groundwater quality of the aquifers in the vicinity of the lease parcels is unknown.

### **3.3.4 Cultural**

#### **3.3.4.1 Cultural Sites**

Occupation in southwestern Colorado dates back to approximately 12,000 years before present, with the first migrations into the area by Paleoindians. Since that time the area has been occupied by various Native peoples and Euro-American groups. Cultural groups that have occupied or migrated through the area include, but are not limited to, Paleoindians, Archaic hunter-gatherers, Ancestral Puebloans, Ute, Navajo, Spanish explorers and settlers, and a mix of Euro-American miners, ranchers, loggers, and homesteaders.

Both prehistoric and historic sites are known to occur within the lease parcel areas. Prehistoric site types include habitation areas that contain architectural elements, seasonal-use campsites, artifact scatters, rock art sites, and resource procurement sites. Historic site types include areas related to early mining, logging, ranching, and homesteading activities.

The leasing of federal mineral rights for potential oil and gas exploration and production is considered an undertaking Section 106 of the National Historic Preservation Act (NHPA).

BLM conducted a literature review of records in the BLM-TRFO and database, and reviewed relevant information in the Compass database maintained by the Colorado Office of Archaeology and Historic Preservation. The area evaluated for cultural resources during the Class I (records search) for this lease sale included all lands within a section proposed for lease, including those



lease parcels that are located on private and state lands. This is to ensure that all cultural properties in the area may be evaluated and trends established.

A Complete Class III Cultural Resource Inventory (100% pedestrian survey) of the proposed lease parcels have not been completed. Three previous surveys of the total lease parcels have been completed. Of the ca. 12,175 acres proposed in these lease sales, only 382 acres (3%) within those leases have been inventoried at a Class III level. Of the 382 acres surveyed, 234 are on BLM lands while 148 acres are private lands. Only one site is recorded within the total proposed lease parcels, and it is located on BLM lands in parcel 6447. However, that site, a historic feature, is not eligible for inclusion onto the National Register of Historic Places and will not be affected by the sale of lease parcels.

Cultural properties will most likely be discovered during future APD oriented inventories. Any or all of these sites may be tested for National Register eligibility, and a recommendation will be made as to the potential for secondary impacts. All alternatives call for site avoidance in order to protect and preserve cultural resource values. In those cases where site avoidance is impractical or undesirable, BLM will implement the appropriate mitigation measures after consultation with SHPO and Tribal authorities. Sites may also be susceptible to secondary impacts arising from increased accessibility.

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

Because the proposed lease sale does not involve ground disturbance, the proposed undertaking will have no effect on historic properties. Any future development of parcels that are purchased as a result of the lease sale will be subject to additional Section 106 compliance, including identification, effects assessment, consultation, and if necessary, resolution of adverse effects. As with cultural resources, there is some potential that any of the nominated parcels may contain Traditional Cultural Properties (TCP). These areas are associated with “cultural practices or beliefs of a living community that (a) are rooted in the community’s history, and (b) are important in maintaining the continuing cultural identity of the community” (National Register Bulletin 38:1). TCPs are areas that are eligible for inclusion in the National Register of Historic Places. The recognition of TCPs is often difficult for non-Tribal members because the term “Traditional” in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice.

Exploration and development activities that might be proposed as a result of a lease includes those which could physically disturb Native American religious sites (e.g., building well pads, access roads, installation of pipelines, etc.). While leasing in itself does not threaten potential Native American religious sites and values found within the area, previous cases suggest that consultation with the involved tribes should be accomplished before the lease sale in order to determine Native American concerns. The lands managed by the BLM Tres Rios File Office are affiliated with 24 Native American tribes. BLM has sent informational letters to officials of these tribes (see Section 5.2) requesting their input, concerns and inviting those tribes to enter a consultation process if they so desire.

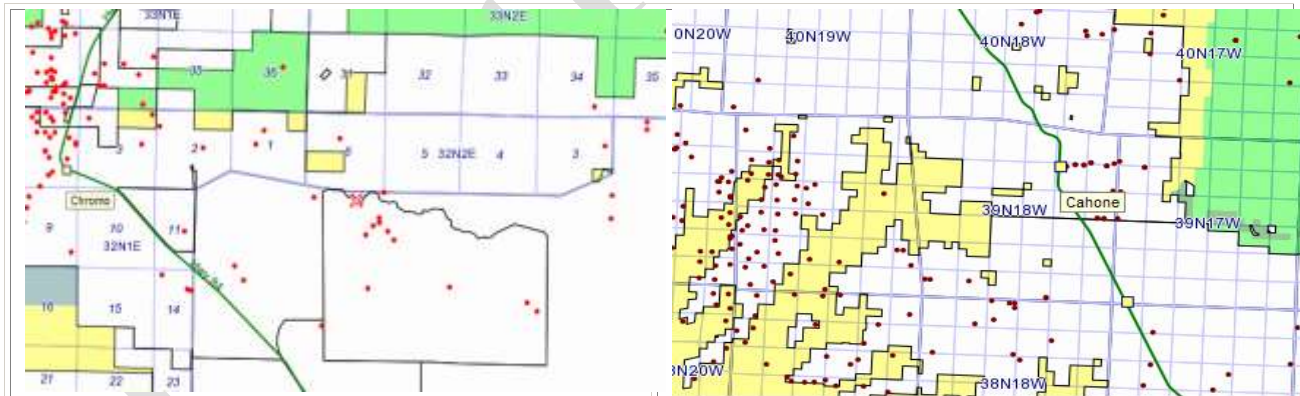
#### **3.3.5 Transportation**

Of the 12,175 acres under consideration for lease, 3,369 surface acres are managed by the BLM. The majority of the BLM surface acres are isolated parcels surrounded by private land with no designated BLM roads and no designated traffic restrictions. Nominated lease parcels located on private surface do not fall under BLM's travel management. Roads on private surface on and accessing the lease parcels are mostly private ownership or rural county roads. Traffic on these routes varies by season, but road use appears to be predominately private landowners in the area. It should be noted that there is industrial traffic near parcels 6448 and 6451 due to extraction at the King Coal II coal mine.

### 3.3.6 Air Quality and Climate

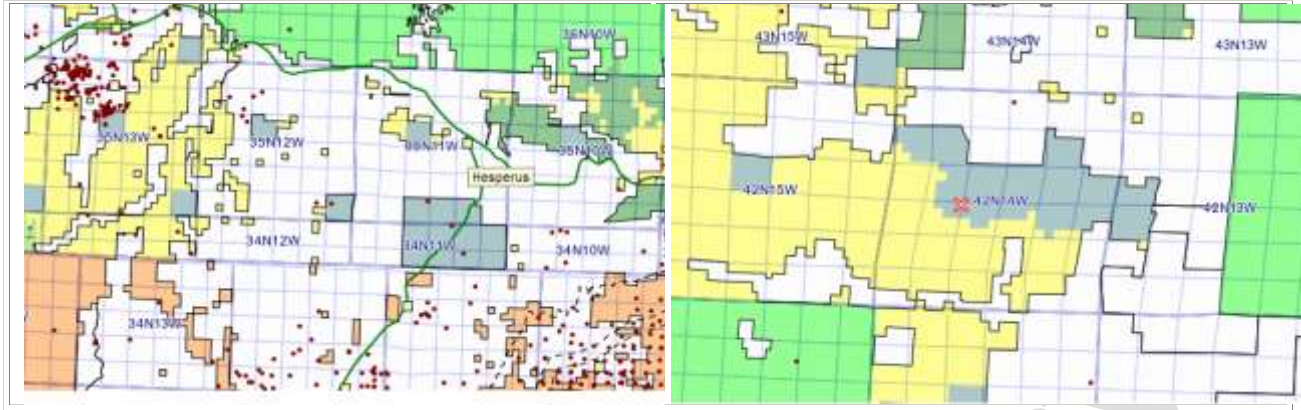
The proposed lease parcels are primarily located in rural portions of the Tres Rios Field Office planning area boundaries. Nominated parcels include 2 in the Chromo area (Archuleta County); 1 in the SW Dove Creek area (Dolores County); 1 in the McKenna Peak area (approx. 50% in Delores and 50% in San Miguel County), and 8 in the Hesperus area<sup>1</sup> (Montezuma and La Plata County). The Colorado Oil and Gas Conservation Commission (COGCC) parcel maps shown in Figure 3.3.6 below provide a relative scale of current or proposed oil and gas well activity within the vicinity of the nominated parcels. The wells indicated (shown as red dots) include producing, dry, abandoned, shut in, and located but not yet drilled well locations. An analysis of the COGCC database for producing wells near the parcel areas showed limited activity, save for the Southwest Dove Creek area parcel (6533). By far this parcel had the highest concentration of producing wells (approx. 29) within 5 km of the center of the parcel.

**Figure 3.3.6. COGCC Area Maps (clockwise as identified above)<sup>2</sup>**



<sup>1</sup> A small portion of parcel 6450 lies within Montezuma County.

Maps also show surface area ownership within parcel vicinities (BLM lands shown in yellow).



The U.S. Environmental Protection Agency (EPA) has established national ambient air quality standards (NAAQS) for criteria pollutants, including carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). Exposure to air pollutant concentrations greater than the NAAQS has been shown to have a detrimental effect on human health and the environment. The EPA has delegated regulation of air quality under the federal Clean Air Act to the State of Colorado. The Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division (APCD), administers Colorado's air quality control programs and is responsible for issuing permits for emission sources. The State has established the Colorado Ambient Air Quality Standards (CAAQS), which can be more, but not less stringent than the NAAQS. In addition to the criteria pollutants, regulations also exist to control the release of hazardous air pollutants (HAPs). HAPs are chemicals that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. EPA currently lists 188 identified compounds as hazardous air pollutants, some of which can be emitted from oil and gas development operations, such as benzene, toluene, and formaldehyde. Ambient air quality standards for HAPs do not exist; rather these emissions are regulated by the source type, or specific industrial sector responsible for the emissions.

Ambient air quality in the affected environment (i.e. compliance with the NAAQS) is demonstrated by monitoring for ground level (i.e. receptor height) atmospheric air pollutant concentrations. In general, the ambient air measurements show that existing air quality in the region is good. Concentrations for the various air pollutants are below the applicable state and federal ambient air quality standards. However, ozone monitoring data suggests existing air quality concentrations are approaching the ambient 8-hour air quality standard of 75 ppb (3 year average of the annual 4<sup>th</sup> highest 8-hour average). Ozone is not emitted directly from sources, but is chemically formed in the atmosphere via interactions of oxides of nitrogen (NO<sub>x</sub>) and volatile organic compounds (VOCs) in the presence of sunlight and under certain meteorological conditions (NO<sub>x</sub> and VOCs are ozone precursors).

Ozone formation and prediction is complex, generally results from a combination of significant quantities of VOCs and NO<sub>x</sub> emissions from various sources within a region, and has the potential to be transported across long ranges.

Condensable particulate matter does not appear to be a pollutant of concern at this time. The last

two available years of data for PM<sub>10</sub> (Durango) show levels of the pollutant have exceeded the 24-hour maximum. However, CDPHE documented the readings as exceptional events due to regional dust storms. If an exceedance of the NAAQS for PM<sub>10</sub> (conc. greater than 155 µg/m<sup>3</sup> in attainment areas and ≥ 98 µg/m<sup>3</sup> in non-attainment areas) can be shown to have resulted from a natural event and can be documented with scientific evidence, the event can be excluded from NAAQS calculations (not calculated, raw data shown below). According to CDPHE reports the APCD has documented 31 exceptional events during 2009 and 2010 for several days in Alamosa, Pagosa Springs, Crested Butte, Durango, Grand Junction, Clifton, and Telluride. The current available air monitoring data for the region is shown in Table 3.3.6 below.

**Table 3.3.6. Current Area Monitoring Data**

Monitor Name and Location	Owner	Pollutant (Standard, Limit)	Monitor Data		
			2008	2009	2010
Durango - 1235 Camino Del Rio	CDPHE	PM <sub>10</sub> (24 hour, 150 µg/m <sup>3</sup> )	125	203	320
Cortez – Health Dept. 106 W. North St.	CDPHE	PM <sub>2.5</sub> (24 Hour, 35 µg/m <sup>3</sup> )	25.3	19.0	17.0
Cortez – Health Dept. 106 W. North St.	CDPHE	PM <sub>2.5</sub> (Annual, 15 µg/m <sup>3</sup> )	6.0	7.0	6.0
Cortez – Health Dept. 106 W. North St.	CDPHE	O <sub>3</sub> (8 hour, 0.075 ppm)	0.064	0.064	0.064
Mesa Verde National Park	NPS	O <sub>3</sub> (8 hour, 0.075 ppm)	0.075	0.071	0.073

There is broad scientific consensus that humans are changing the chemical composition of our atmosphere. Activities such as fossil fuel combustion, deforestation, and other changes in land use are resulting in the accumulation of trace greenhouse gasses (GHGs) such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), water vapor, and several industrial gases in our atmosphere. An increase in GHG emissions is said to result in an increase in the earth's average surface temperature, primarily by trapping and decreasing the amount of heat energy radiated by the earth back into space. The phenomenon is commonly referred to as global warming. Global warming is expected, in turn, to affect weather patterns, average sea level, ocean acidification, chemical reaction rates, precipitation rates, etc., which is commonly referred to as climate change. The Intergovernmental Panel on Climate Change (IPCC) has predicted that the average global temperature rise between 1990 and 2100 could be as great as 5.8°C (10.4°F), which could have massive deleterious effects on the natural and human environments. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably, from approximately 280 ppm in 1750 to 396 ppm in 2012 (as of June). The rate of change has also been increasing as more industrialization and population growth is occurring around the globe. This fact is demonstrated by data from the Mauna Loa CO<sub>2</sub> monitor in Hawaii that documents atmospheric concentrations of CO<sub>2</sub> going back to 1960, at which point the average annual CO<sub>2</sub> concentration was recorded at approximately 317 ppm. The record shows that approximately 70% of the increases in atmospheric CO<sub>2</sub> concentration, or build up, since pre-industrial times has occurred within the last 50 years. In the coming decades climate

change may lead to changes in the Mountain West and Great Plains, such as increased drought and wild land fire potential.

### 3.3.7 Socio-Economics and Environmental Justice

Executive Order 12898 requires federal agencies to assess projects to “identify and address the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” There are no environmental justice communities in the study area, either based on race, ethnicity, or income. The areas involved in the lease sale are rural in nature, and small communities and sparsely populated subdivisions exist within variable distances from the proposed lease parcels.

#### Profile of County Demographics, 2000-2010

	Archuleta	Dolores	La Plata	Montezuma	San Miguel	Colorado	U.S.
Population (2010*)	12,136	2,027	50,149	25,279	7,299	5,029,196	303,965,272
Population (2000)	9,898	1,844	43,941	23,830	6,594	4,301,261	281,421,906
Population Percent Change (2000-2010*)	22.6%	9.9%	14.1%	6.1%	10.7%	16.9%	8.0%

\* The data in this table are calculated by ACS using annual surveys conducted during 2006-2010 and are representative of average characteristics during this period.

Data Sources: U.S. Department of Commerce. 2012. Census Bureau, American Community Survey Office, Washington, D.C.; U.S. Department of Commerce. 2000. Census Bureau, Systems Support Division, Washington, D.C.

The five-county region has experienced varying degrees of fluid mineral development. La Plata and Montezuma currently contain the highest density of fluid minerals development within the field office. Employees in the oil and gas sector within the five counties earn an average of approximately \$60,000 per year (US Census Bureau, County Business Patterns 2010).

The following table reports the average annual fluid minerals production for each county, including an estimated revenue value, figured using the average state wellhead prices from 2009: Oil at \$52.33/bbl and natural gas at \$3.21/MCF (IPAA, August 2011 Report <http://ipaa.org/reports/docs/2010-2011IPAAOPI.pdf>). The production values are averaged over the past ten full years of production (2002-2011); (Colorado Oil and Gas Conservation Commission <http://cogcc.state.co.us/>).

#### Average Annual Production and Revenue

	Archuleta	Dolores	La Plata	Montezuma	San Miguel	Total
Oil Production (Thousand bbl)	2.55	38.0	36.0	225	12.5	314
Oil Revenue (\$Thousand)	133.3	1,989	1,885	11,756	656	16,420

Gas Production (MMCF)	5,092	16,337	433,342	322,992	15,610	793,373
Gas Revenue (\$Thousand)	16,345	52,441	1,391,029	1,036,803	50,108	2,546,727

Federal oil and gas leases generate a one-time lease bonus bid as well as annual rents. The minimum competitive lease bid is \$2.00 per acre. If parcels do not receive the minimum bid they may be leased later as noncompetitive leases that don't generate bonus bids. Within the Tres Rios field office, average bonus bids are approximately \$75 per acre for oil and gas leases. Lease rental is \$1.50 per acre per year for the first five years and \$2.00 per acre per year thereafter. Typically, oil and gas leases expire after 10 years unless held by production. During the lease period annual lease rents continue until one or more wells are drilled that result in production and associated royalties. The royalty rate is 12.5 percent of revenue associated with mineral extraction on federal leases.

Federal mineral lease revenue for the State of Colorado is divided thusly: 48.3 percent of all state mineral lease rent and royalty receipts are sent to the State Education Fund (to fund K-12 education), up to \$65 million in FY 2009 – FY 2011, and growing at four percent per year thereafter. Any amounts greater than the upper limit flow to the Higher Education Capital Fund. 10 percent of all state mineral lease rent and royalty receipts are sent to the Colorado Water Conservation Board (CWCB), up to \$13 million in FY 2009, and growing at four percent per year thereafter. Any amounts greater than the upper limit flow to the Higher Education Capital Fund. 41.4 percent of all state mineral lease rent and royalty receipts are sent to the Colorado Department of Local Affairs, which then distributes half of the total amount received to a grant program, designed to provide assistance with offsetting community impacts due to mining, and the remaining half directly to the counties and municipalities originating the FML revenue or providing residence to energy employees.

Bonus payments are allocated separately from rents and royalties, in the following manner: 50 percent of all state mineral lease bonus payments are allocated to two separate higher education trust funds: the "Revenues Fund" and the "Maintenance and Reserve Fund". The Revenues Fund receives the first \$50 million of bonus payments to pay debt service on outstanding higher education certificates of participation (COPs). The Maintenance and Reserve Fund receives 50 percent of any bonus payment allocations greater than \$50 million. These funds are designated for controlled maintenance on higher education facilities and other purposes. The remaining 50 percent of state mineral lease bonus payments are allocated to the Local Government Permanent Fund, which is designed to accumulate excess funds in trust for distribution in years during which FML revenues decline by ten percent or more from the preceding year.

### 3.3.8 Recreation and Visual Resources

Of the 12,175 acres under consideration for lease, 3,369 surface acres are managed by the BLM upon which dispersed recreational activities could occur. However, the majority of the BLM surface acres are isolated parcels surrounded by private land through which no formalized legal access exists. A portion of Parcel 6450 (approx. 1400 acres) is technically accessible to the

public via the Menefee Mountain Wilderness Study Area (WSA), though a 4 mile hike over rugged terrain would be required to access the parcel. Similarly, access to Parcel 6471 (located on State managed lands and approx. 1000 acres) is accessible via the McKenna Peak WSA, also requiring a substantial and difficult hike. The recreational activity most likely to occur on these units is big game hunting. Due to the remote nature, and difficult access of these areas, the expectation of a successful hunt, and the importance of an undisturbed natural setting are likely important elements to the hunting experience.

Parcel 6447 abuts a portion of the Hesperus Mountain Ski area, a developed recreation ski facility located on private land.

The SJ/SM RMP did not assign Visual Resource Management Classes to the lands under consideration for lease and there are no visual management objectives upon which to base management decisions. However, direct and indirect effects to the existing setting can still be analyzed in general terms for the proposed action.

The parcels under consideration occur on a mixture of private surface/federal minerals, state surface/federal minerals and federal surface/federal minerals. Topographic relief is significant across much of the area, oftentimes separating the parcels under consideration for lease from high use corridors and likely points of observation.

Parcel 6447 is within the viewshed of the San Juan Skyway Scenic Byway. According to the Colorado Department of Transportation webpage, the San Juan Skyway was designated by the U.S. Secretary of Transportation as an All-American Road, the highest level of designation, in 1996 and is one of ten America's Byways designated in Colorado. The San Juan Skyway Corridor Management Plan states as its overall goal for scenic and natural areas "is the maintenance and enhancement of the scenic and natural character of the corridor through the preservation of significant open space areas."

### **3.3.9 Leasable Solid Minerals**

There are no known coal deposits within the area of the McKenna Peak, or Southwest Dove Creek parcels. The Chromo Parcel is located in an area that has been identified as having low potential for coal by the USGS and there is no indication of any mining for coal in the Chromo Parcel Area.

A seam of coal (Cretaceous Menefee Formation) is located within the area of the Hesperus Parcel Area. It outcrops at the surface to the east and south of Hesperus, and dips gently to the south. Thickness of the coal is typically between six to eight feet. The coal is a high-quality bituminous, with relatively low sulfur and low ash content. Historically, small underground mines were developed to serve local demand by ranchers, farmers, and the Durango and Rio Grande Western Railroad. Surface mines were not economic due to the increasing overburden of the seam. These mines were all closed by the early 1960's.

The King Coal II Mine near Hesperus is the only active mine in the Tres Rios Field Area. The coal is mined by the underground room and pillar method. Surface disturbance is restricted to the existing adit, located on State land. To date, there is no evidence of subsidence.

Furthermore, the coal mine is dry; it has not encountered any aquifers nor does it produce any methane or other gases

Standard Lease Terms and Conditions are applied to all oil leases issued by the BLM. Section 6 – Conduct of Operations states:

“Lessee shall conduct operations in a manner that minimizes adverse effects to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section.”, and

“Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.”, and

“Areas to be disturbed may require inventories or special studies to determine the extent to effects to other resources. Lessee may be required to complete minor inventories or short term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historical or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects.”

Furthermore, the San Juan/San Miguel Record of Decision for the Oil and Gas Amendment (p. 17, 1991), declares that, “Controlled Surface Use stipulations will be used to protect coal mines where the mining method or location is such that location of subsequent wells can avoid significant conflicts, riparian/wetland vegetation, and steep slopes.”

## **4.0 ENVIRONMENTAL EFFECTS**

### **4.1 Introduction**

This chapter will analyze the direct, indirect, and cumulative effects of the resources brought forward for analysis as identified in Section 3.3 based on the key issues previously identified in Section 1.8. The direct and indirect effects for each alternative will be analyzed in Section 4.3 followed by the cumulative effects in Section 4.4. Recommended mitigations will be provided based on the effects analysis at the conclusion of each resource section.

### **4.2 General Analysis Assumptions and Guidelines**

#### **4.2.1 Parcel Development Potential**

The act of leasing parcels would, in itself, have no direct effects on any resources in the field office. All indirect effects would be related to as yet undetermined future development of the leases. Even if parcels are leased, it remains unknown whether development would actually occur, and if so, where specific wells would be drilled and where facilities would be placed. This would not be determined until the BLM receives an APD in which detailed information about



proposed wells and facilities would be provided for particular leases. Below are assumptions on the oil and gas development potential of each parcel. This EA examines the impact of leasing, and when practical, the reasonably foreseeable future development of the lease parcels.

Chromo Area Parcels: 6401 and 6402

These parcels are between the Chromo and Price-Gramps Oil Fields where historical oil and gas activity occurred in the 1920's and 30's. However, the most recent activity was a dry hole drilled 15 years ago and most wells in the area are plugged and abandoned. These parcels are small and irregularly shaped and would have to be combined with neighboring parcels to meet minimum drilling spacing requirements. Due to the requisite combining of parcels, it is assumed that development will be limited to one well or less per parcel.

Hesperus Area Parcels: 6433, 6434, 6447, 6448, 6449, 6450, 6451 and 6452

These parcels occur over a relatively large area with a sparse amount of wells, most of which were dry, or have been depleted and abandoned. Regionally, both abandoned and actively producing, small and large oil and gas fields are present to the northwest, south, and southeast of these parcels. Potential drilling targets for these parcels are Mancos Shale and deeper. It is likely that an exploratory well will be drilled in the area, but at this time it is difficult to predict how much more development the area will receive.

McKenna Peak Area Parcel: 6471

There is no established production in the area, so any development potential is purely speculative.

SW Dove Creek Area Parcel: 6533

This parcel is within the Papoose Canyon Field, with a number of producing oil and gas wells. Because the parcel is only 160 acres, spacing requirements will likely limit parcel development to one new well.

#### **4.2.2 Estimated Surface Disturbance**

Leases are valid for 10 years or as long as there is at least one producing well. It is assumed that the purchasers of these leases would drill at least one well on each lease associated with the sale in order to secure the lease rights. As explained above, the development potential for each of these parcels is either low and/or difficult to predict, and therefore, this EA will focus on analysis of the potential effects from the development of one well on each parcel.

The 2006 San Juan National Forest and BLM Public Land Oil and Gas Reasonable and Foreseeable Development (RFD) assumed a total of 1.5 acres of surface disturbance for a new conventional oil and gas well on a one-well pad, while the 2009 RFD Amendment assumed a 2.5 acre well pad for a new well targeting unconventional shale hydrocarbons. Both assumed 2.4 acres of surface disturbance for associated access road and flowline Rights-of-Way (ROW).

Because of the uncertainty in the drilling targets, geologic potentials and drilling technology on these lease parcels, this EA will assume an average of the 2006 and 2009 RFD surface disturbance: a 2 acre well pad with 2.4 acres of associated access road and flowline ROW. Approximately 1.8 acres is short-term disturbance (could be reclaimed within three years), and the remaining 2.6 acres is long-term disturbance (reclaimed after the life of the well). The table below depicts the total acres of surface disturbance predicted for drilling one well on each parcel.

**Table 4.2.2. Surface Disturbance on each Parcel**

<b>Timeframe</b>	<b>Well pad (acres)</b>	<b>Road/Flowline ROW (acres)</b>	<b>Total (acres)</b>
Short-term Reclamation	1	0.8	1.8
Long-term Disturbance	1	1.6	2.6
Total	2	2.4	4.4

### **4.3 Direct and Indirect Effects**

Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

#### **4.3.1 Alternative A – Proposed Action**

##### **4.3.1.1 Wildlife**

##### **4.3.1.1.1 Wildlife – Migratory Birds**

The proposed action of leasing would not impact any migratory bird species or their habitat, however, potential future development of the proposed leased parcel could impact migratory birds. Site-specific analysis would be conducted at the APD stage to determine and to mitigate potential effects. If future activities should occur within appropriate habitats, those activities could have the potential to affect nesting raptor and migratory bird species through habitat degradation and/or displacement of individual birds. Effects to breeding birds would vary depending on needs for essential life functions such as roosting, nesting, or foraging. The duration, intensity, seasonality and type of disturbance all has potential for disturbance based on the species-specific sensitivity.

Spatial buffers from development and other human activities are a proven management tool to address effects on breeding activities at raptor nest sites (Richardson and Miller 1997, Romin and Muck 1999, Demarchi and Bentley 2005, BLM 2006, Fuller 2010). CPW has established Recommended Buffer Zones and Seasonal Restrictions for Raptors in Colorado (Klute 2009).

Habitat for other migratory birds could be lost as a result of potential future activities through surface disturbances. Habitat fragmentation could also occur, reducing the amount of suitable habitat. Due to the limited size of long-term surface disturbance resulting from potential activities, effects to songbird habitat within the project area should be low. Noise produced by potential construction, drilling, and operational activities could deter birds from roosting,

foraging, breeding or nesting in the area. The intensity, duration, and frequency of noise won't be known until the APD stage, and effects would vary over the life of any project, but would be most intense during construction activities which could last approximately one month per well.

### **Mitigation**

To reduce the potential effects to Migratory Birds or Special Status Raptor nest sites, the following mitigation measures on potential future development could be applied as conditions of approval at the time of development:

- Covering the entire surface of the reserve pit with bird netting that meets a minimum requirement of 1.5-inch mesh to exclude passerines and other small-sized birds;
- Maintaining bird netting for as long as there are liquids in the reserve pit;
- Limiting, if feasible, surface disturbing activities during the core breeding period for migratory birds (May 15 through July 15);
- If construction or surface disturbing activities do occur during critical breeding and reproduction periods, appropriate noise stipulations could be required.
- Completing surveys within at least a 0.5-mile radius around all types of surface disturbance activity in potential habitat for the presence of nesting raptors.
- Project activities shall retain and avoid modifying identified cavity trees, snags, and perches in the project area.
- Stacks and exhaust pipes to the dehydrators, separators, heaters, and production tanks and similar features shall be excluded from bird entry with appropriate durable, cone-shaped screening material.
- Operators shall keep all hatches/ doors closed to the production tanks when not in use.
- A preventative, containment system (e.g., a sturdy bucket) shall be placed under the take-out pipes of the condensate tanks to prevent fluid leakages onto the soil surface.
- Powerlines and transmission facilities design shall comply with guidelines in the publication, *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (<http://www.aplic.org/>).

The following parcels will have raptor timing limitations and NSO restrictions when applicable: 6401, 6402, 6433, 6434, 6447, 6448, 6449, 6450, 6451, 6452, 6471 and 6533.

#### **Timing Limitation stipulation – CO-18**

No surface use is allowed during the following time period: Feb.1 – Aug. 15.

On the lands described below: Within one-quarter-mile radius around the nest site.

For the purpose of: Protecting raptors from disturbance.

#### **No Surface Occupancy stipulation – CO-03**

NSO within one-eight mile radius of nest site.

### **4.3.1.1.2 Wildlife – Terrestrial**

Although the proposed action of leasing itself has no direct effects on wildlife in the area, future potential drilling could impact wildlife species and their habitat. At the time an exploration or

development proposal is presented to the BLM for these lease parcels; additional NEPA analysis will take place to assess the effects of that proposal and BLM may recommend modifications or disapprove proposed activities that would have significant effects to wildlife species. Any effects to specific species would be addressed at the APD stage and appropriate mitigation would be developed. Noise and human presence associated with potential development could temporarily displace wildlife from the area around the wells and roads during drilling and construction activities. Most displaced wildlife would be expected to return to the area after drilling is completed. After interim reclamation, direct effects to wildlife would be minimal, except for periodic disturbance by personnel if wells are productive.

Developing these leases could affect designated big game use areas. All of the proposed parcels are in or near designated big game winter range and elk production areas. Although specific effects associated with lease development cannot be predicted at the leasing stage, BLM policy and current SJ/SM ROD/RMP decisions allow for the site-specific development of COAs (Conditions of Approval) at the APD stage that are effective in substantially reducing direct and indirect effects on aquatic and terrestrial wildlife including facility relocations of up to 200 meters. Implementation of State and federally-imposed design measures to control erosion and spills also limits the risk of contaminants migrating off-site and degrading water quality.

BLM continues to apply traditional timing limitations to important big game summer and winter (i.e., severe winter and critical winter) ranges, although these measures were not designed or intended to deal effectively with new drilling and completion technologies (e.g., deep directional, multi-well pads) and the disposal of large quantities of produced fluids. Sawyer (2006) demonstrated strong avoidance response of natural gas development activity in Wyoming deer and the pronounced influence of residual activity associated with maintenance/production phases and subsequent recreational use of well access roads. Later, Sawyer (2009) acknowledged that avoidance response in deer could be substantially reduced (40-60 percent) in these fields by employing technologies that reduce the truck transport of produced fluids (i.e., fluid transport via pipeline). These studies provide compelling evidence that behavioral effects (habitat disuse from avoidance, elevated energetic demands) associated with human and vehicular activity attributable to oil and gas development are the primary effects on big game and are, in these circumstances, more expansive and deleterious than direct habitat loss associated with longer term infrastructure occupation and shorter term vegetation modifications.

Industry is actively planning or implementing fluids gathering systems that would drastically reduce the frequency of vehicle activity on affected big game ranges. Complementary actions that are being employed to further reduce direct or indirect effects include pooled employee transport, on-site employee housing, adjusting lease requirements or offering year-round development incentives to promote clustered development, increasing the number of wells sequentially drilled at each location, and phased reclamation instituted soon after the pad is constructed. Site-specific conditions and opportunities are also reflected in COAs developed at the APD stage, including restricting public access on well access roads and pipeline rights-of-way and siting facilities and infrastructure in a manner that balances the interspersed cover and forage compatible with the behavioral traits of deer and elk. Although the proposed lease parcel may not be developed in this manner, more advanced objectives and principles are likely

to be universally promoted and applied where practical BLM believes serious effects to big game abundance and distribution can be largely averted through the use of such measures.

### **Mitigation**

The following additional mitigation is recommended in the form of stipulations to reduce the potential environmental effects described above if development were to occur: The following parcels have big game winter concentration area or elk calving area stipulations: 6401, 6433, 6449, and 6452:

#### **Big Game Crucial Winter Habitat Timing Limitation CO-09**

Big Game crucial winter habitat December 1 – April 30.

#### **Big Game birthing areas; Elk Calving Timing Limitation CO-10**

April 16 – June 30

### **4.3.1.1.3 Wildlife – Aquatic**

Although the proposed action of leasing itself has no direct effects on aquatic wildlife in the area, future potential drilling could impact associated wildlife species and their habitat. Any effects to specific species would be addressed at the APD stage and appropriate mitigation would be developed. Potential future activities could have effects to connected, downstream habitats for aquatic wildlife (See Threatened, Endangered and Sensitive Species section for aquatic TES species, Section 4.3.1.2.1). After interim reclamation, direct effects to wildlife would be minimal, except for periodic disturbance by personnel if wells are productive.

### **Mitigation**

Mitigation measures on potential future development could include requiring appropriate BMPs for sediment and erosion control such as seeding, water bars, silt fencing, ditches, and reclamation measures (See Wetland and Riparian and Water Quality sections). Erosion control measures would be placed on well pads, roads and pipelines to divert precipitation runoff from entering stream channels and riparian areas. The lessee and operator would be required to comply with the Clean Water Act, the State of Colorado Stormwater Regulations, and all other applicable laws pertaining to oil and gas operations in wetland and riparian areas.

To reduce the potential environmental effects described above if development was to occur, the following stipulations should be applied to all parcels with potential habitat for aquatic wildlife.

#### **Aquatic Habitat CO-28**

For the protection of perennial water impoundments and streams, and/or riparian/wetland vegetation zones, activities associated with oil and gas exploration and development including roads, transmission lines, storage facilities, are restricted to an area beyond the riparian vegetation zone.

### **4.3.1.2 Threatened, Endangered and Sensitive Species**

#### 4.3.1.2.1 Wildlife – Threatened, Endangered and Sensitive Species

Under all the alternatives, it has been determined that the below listed threatened, endangered or candidate species will not be affected and formal consultation with the USFWS is not necessary. The TES species that may occur in the analysis area are discussed in detail below with the appropriate effects determination for those species. Though leasing itself will not impact these species, potential future development of the parcels may affect these species. Since it is unknown if the parcels would be developed or the extent of the development, it is difficult to assess potential effects to specific species. Site-specific analysis would be conducted at the APD stage to determine and to mitigate potential effects to Special Status Species. At that time, species specific Recovery Plans and Conservation Agreements would be reviewed for the species with potential effects. Effects could potentially include (but not be limited to) displacement into less suitable habitat, habitat fragmentation and habitat degradation. Noise and increased human activity could also disrupt breeding and nesting activities. Site-specific biological resource surveys would be required at the APD stage, and depending on the location and nature of the proposed development and results of the surveys, Endangered Species Act Section 7 consultation with USFWS would be required if development would impact Federally listed species.

The Bonytail (*Gila elegans*), humpback chub (*Gila cypha*), Colorado pikeminnow (*Ptychocheilus lucius*) and razorback sucker (*Xyrauchen texanus*) are federally endangered fish species that are potentially found in the Tres Rios management area. Critical habitat for all of these species is outside of the proposed parcels area and the proposed action will have no effect to these species. Viewed narrowly, water depletions are not associated with leasing parcels, so there would be no effect to listed fishes from these activities. However, future development of these parcels may result in water depletion. These types of projects are considered under a programmatic assessment and the responsive programmatic biological opinion by the U.S. Fish and Wildlife Service for depletions in the Upper Colorado River. Water depletions or affects to these fish species will not be addressed further in this assessment.

- *The proposed alternatives will have “No Effect” to the Bonytail, Humpback Chub, Colorado pikeminnow and the razorback sucker.*

The Mexican spotted owl (*Strix occidentalis lucida*) is a threatened species with habitat definitions refined for Colorado which include the importance of sandstone cliffs for nesting. Though there is no mapped critical habitat for the Mexican spotted owl in the analysis area, there is potentially suitable habitat for Mexican spotted owls near parcel 6533. Stipulations **CO-06** and **CO-21** will be applied to protect Mexican spotted owl roosts and nests, and nesting and fledgling habitat. Survey efforts will continue in ensuing years to locate Mexican spotted owls and define the best potential habitat.

- *The proposed action will have “No Effect” on the Mexican Spotted owl.*

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a federally endangered species that predominately uses riparian areas with slow moving water and a multi-structured vegetation component, usually comprised of willow with a cottonwood over-story. As described in the Southwest Willow Flycatcher Recovery Plan (USFWS 2002), none of the proposed leases

are within the Upper Colorado Recovery Unit and there is no critical habitat within the analysis area. Though there is potential habitat for this species around lease 6402, there are no known occurrences within the analysis area.

- *This proposed action will have “No Effect” on the Southwestern Willow Flycatcher.*

The Gunnison sage grouse (*Centrocercus minimus*) is a USFWS candidate species and a BLM sensitive species. The Gunnison sage grouse (grouse) is currently petitioned for listing by the USFWS. It is possible that it will be listed at some point during the life of this lease. There are no recent documented occurrences of grouse in the analysis area; however parcel 6533 is within the historic range of the Gunnison sage grouse as mapped by the Colorado Parks and Wildlife NDIS database (CPW NDIS). Gunnison sage grouse are currently located in two distinct sub-population areas within the Tres Rios field office; the Dove Creek and Dry Creek populations. The closest known occupied habitat for grouse in relation to parcel 6533 is in Dove Creek, to the north of this parcel. If listed, the Gunnison sage grouse may have designated “critical habitat” within the boundaries of the parcel 6533. The BLM currently adheres to the “Gunnison Sage-grouse Rangewide Conservation Plan” (RCP 2005) for management direction in regards to the grouse. If grouse are discovered within the parcel analysis area, or if critical habitat is designated in the analysis area; the guidelines in the RCP and in the eventual recovery plan for this species will be adhered to. If this species is documented, the direction outlined in the RCP in relation to oil and gas leasing and development will be implemented and every effort will be taken to manage grouse habitat appropriately. Because grouse are not currently known to occur in the analysis area and are not affected by leasing itself, this species will not be affected by the proposed action.

- *This proposed action is not likely to jeopardize the continued existence of Gunnison Sage-grouse.*

The following stipulation will be applied to lease parcel 6533:

**Exhibit CO-34** The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

In addition, Stipulation **CO-15** would apply to parcel 6533 to protect grouse winter habitat. Stipulation **CO-30** would apply to parcel 6533 to protect grouse nesting habitat. In addition, stipulation **CO-40** would apply to parcel 6533 to protect sage grouse habitat.

### **BLM Sensitive Species**

Several BLM sensitive species that may be found in the lease parcels were brought forward for analysis in this assessment. These include the Brewer's sparrow, Bald eagle, Allen's big-eared bat, fringed myotis, Yuma myotis, big free-tailed bat, spotted bat, peregrine falcon, northern leopard frog, Colorado cutthroat trout, flannelmouth suckers, bluehead suckers, roundtail chubs, desert spiny lizard and long-nosed leopard lizard. There is a diversity of habitats suitable for terrestrial species from vegetated riparian areas to pinyon-juniper woodlands. There are several sensitive species that may have suitable habitat within the proposed lease areas.

Brewer's sparrow (*Spizella breweri* - BLM sensitive) is a small, commonly found migratory songbird that is found in the plains and foothills of the western United States. Habitat loss has contributed to the overall decline of this species, but this proposed action in itself will not threaten this species. Stipulations to protect migratory birds would apply to these leases if development were to occur.

American bald eagles (*Haliaeetus leucocephalus* -BLM sensitive) and Golden eagles (*Aquila chrysaetos*) are known to occupy the proposed lease areas throughout the year. Portions of lease parcels 6449 and 6402 are in mapped bald eagle winter concentration areas. Though leasing itself will not impact these species, stipulations would apply to these leases to protect bald eagles in the event development were to occur.

The following BLM sensitive bat species are found in semi-desert environments and are known to roost in mines, rock crevices and caves: Allen's big-eared bats (*Idionycteris phyllotis*), fringed myotis (*Myotis thysanodes*), Yuma myotis (*Myotis yumanensis*), Big free-tailed (*Nyctinomops macrotis*) and spotted bats (*Euderma maculatum*). There may be roosts, as well as foraging areas, within the proposed project area. These species are also tied to surface water and riparian areas and therefore would likely occur in riparian areas such as the Navajo river. There are no consequences to bat species from leasing stipulations to protect sensitive bat species would apply to these leases if development were to occur.

Peregrine falcons (*Falco peregrinus*) are known to occur and reproduce near several of the parcels in the analysis area. This species is rebounding and was recently delisted from protection under the Endangered Species Act. They are beginning to re-occupy cliff sites that have not been used in decades. New sites are located in southwest Colorado annually. Peregrine falcon annual breeding success is strongly tied to prey availability. There are no consequences to this species from the proposed action. Stipulations to protect Peregrine falcons nests would apply to these leases if development were to occur.

The Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*) is not known to occur within any of the proposed parcels. The Navajo river is adjacent to parcel 6402; however Colorado River cutthroat trout have not been documented in this river system. There are no



effects to the cutthroat trout from the proposed action. However, if this species were found to be present in this river, development of these leases could impact this fish. Surveys and applicable mitigations may be required if development were to occur within potential habitat for this species.

The three warm water BLM sensitive species; the flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*) and the roundtail chub (*Gila robusta*) are not known to occur within any of the proposed lease parcels. Lease parcel 6402 is along the Navajo River and there is potential that these species could occur. The proposed leasing itself is not anticipated to affect any potential occurrences of these species. If this parcel or other parcels that may contain habitat are proposed for development, the proper mitigation measures would be taken to avoid any possible effects.

The northern leopard frog (*Rana pipiens*) is known to occur throughout Colorado and is associated with wet meadows and water's edge. This species is likely to occur in riparian areas located within the analysis area, but would not be affected by leasing itself. Stipulations to protect the riparian zone and hence the northern leopard frog would apply to these leases if development were to occur.

### **Mitigation**

To reduce the potential environmental effects described above if development were to occur, the following stipulations should be applied to proposed parcels 6449 and 6402.

### **Bald Eagle Winter Roost Sites CO-04, CO-23 and SJ-07**

- The lessee is hereby notified that, a bald eagle winter roost site exists on a portion of the lease tract. Development activities may be modified to prevent effects to bald eagles protected by the Migratory Bird Treaty Act of 1918 (16 U.S. Code, Sec. 703-712, as amended), and the Bald and Golden Eagle Protection Act (16 U.S. Code, Sec. 668-668d, 1940 as amended). In order to avoid violation of these statutes, the lessee should contact the BLM Authorized officer prior to surveying or other surface activities on the lease tract.
- To protect bald eagle winter roost sites, a no surface use applies to within one-quarter mile of a known roost site.
- To protect bald eagle winter roost sites, a timing limitation is applied between November 16<sup>th</sup> and April 15<sup>th</sup>.
- To protect bald eagle winter concentration areas, a timing limitation is applied between December 1<sup>st</sup> and April 15<sup>th</sup>.

The following stipulations apply to lease parcel 6402:

### **No Surface Occupancy stipulation – CO-28**

No surface occupancy or use is allowed on the lands described below: Wetlands, floodplains, riparian areas, water influence zones, and fens, and lands adjacent to them within a 100-meter buffer from the edge of the hydrophytic vegetation.

For the purpose of: Maintaining water quality and protecting the hydrologic and ecological integrity of riparian areas and wetlands.

#### **4.3.1.2.2 Plants – Threatened, Endangered, and Sensitive Species**

The proposed action of leasing the proposed parcels would not impact any Federally listed BLM or USFS plants designated as sensitive. However, potential future development of the parcels may impact these species. Since it is unknown if the parcels would be developed or the extent of the development, it is difficult to assess potential effects to specific species. Effects could potentially include (but not be limited to) habitat fragmentation and habitat degradation. Site-specific rare plant surveys would be required at the APD stage, and depending on the location and nature of the proposed development and results of the surveys, Endangered Species Act Section 7 consultation with USFWS would be required if development would impact Federally listed species.

Parcel 6401 is within suitable habitat for Pagosa skyrocket (*Ipomopsis polyantha*), which is listed as endangered under the Endangered Species Act. Pagosa skyrocket is not known to occur on Parcel 6401, and the area has not been surveyed for this species.

#### **Mitigation**

Since the Parcel 6401 has not been surveyed, and to ensure that there will be no effect to this Federally listed species, the following No Surface Occupancy (NSO) Stipulation (**CO-08**) would apply to Parcel 6401.

#### **Exhibit CO-08**

- NSO on habitat areas with special status plant species (Includes federally-listed and proposed species for listing and candidate species.) Exception for special status plant species habitat. The NSO may be altered after important factors are considered in a site-specific impact analysis such as the type and amount of surface disturbance, plant frequency and density, and the relocation of disturbances.

#### **4.3.1.3 Soil and Water Resources**

##### **4.3.1.3.1 Soil and Water Resources – Surface Geology/Soils**

The proposed action allows the subsequent exploration and development of the lease. Exploration and development includes activities which would physically disturb soils (e.g., building well pads, access roads, installation of pipelines, etc.). The size of any well pad will depend on the number of wells and the type of drilling that is being done. Access roads, pipelines and other infrastructure would be developed during both exploration and development activities.

Direct effects resulting from the construction of well pads, access roads, pipelines and reserve pits would include removal of vegetation, exposure of the soil, mixing of horizons, compaction, loss of topsoil, and possible contamination of soils with petroleum constituents. The mixing of shallow soil horizons would result in a blending of soil characteristics and types. This blending would modify physical characteristics of the soils, including structure, texture, and rock content.

Contamination of surface and subsurface soils can occur from leaks or spills of oil, produced water, and condensate liquids from wellheads, produced water sumps, and condensate storage tanks. Leaks or spills of drilling and hydraulic fracturing chemicals, fuels, and lubricants could also result in soil contamination. Such leaks or spills could compromise the productivity of the affected soils. Of these materials, leaks or spills of condensate would have the greatest potential environmental impact. Depending on the size and type of spill, the impact to soils would primarily consist of the loss of soil productivity.

Indirect effects would include increased runoff, erosion due to wind and water, and off-site sedimentation downstream. The amount of runoff, erosion, and off-site sedimentation would depend on soil type and steepness of slope. In areas prone to landslides surface disturbance would exacerbate the potential for slope failure. As discussed in the soil and water effected environment section several of the lease parcel soil types have naturally high to very high runoff potential, are poorly suited for natural surface roads, and have slopes as great as 65%. Construction and use of roads, structures, and drill pad locations in areas with slopes that are greater than 25% would likely destabilize soils. For slopes greater than 40% construction activities would result in severe cut and fill slopes, increase the potential for future slope failures, and be extremely difficult to reclaim.

#### **Mitigation**

Mitigating the effects of development on slopes greater than 40% is Controlled Surface Use (CSU) Stipulation **CO-27** which will require an engineering/reclamation plan to be approved by an Authorized Officer prior to any surface disturbance.

#### **4.3.1.3.2 Soil and Water Resources – Floodplains, Wetlands, and Riparian Zones**

Clearing, grading, and soil stockpiling activities associated with exploration and development actions would alter overland flow and natural groundwater recharge patterns. As previously discussed in the surface geology/soils environmental consequences section, potential effects include surface soil compaction caused by construction equipment and vehicles, which would likely reduce infiltration and increase the volume and rate of surface runoff. In addition, new oil and gas roads and pads could intersect shallow groundwater along cut slopes and alter channel and floodplain characteristics at drainage crossings. The combination of increased surface runoff, decreased infiltration, and changes in drainage features would likely result in increased peak flows and an increase in the frequency and extent of flooding downstream in proportion to the amount of area in the watershed that is impacted by oil and gas development activity. This has the potential to alter floodplain function and affect riparian conditions along intermittent and perennial streams.

#### **Mitigation**

Direct impact to floodplains and riparian zones would be mitigated by No Surface Occupancy Stipulation **CO-28** which restricts oil and gas activities to an area beyond the riparian vegetation zone.

#### **4.3.1.3.3 Soil and Water Resources – Surface Water Quality**

The implementation of Best Management Practices (BMPs) will help to manage stormwater and reduce erosion during the construction and operation of oil and gas facilities. How well the BMPs function will determine much of the impact with regard to surface water quality. If BMPs fail runoff associated with storm events is likely to deposit sediment in minor drainages down gradient of disturbed areas. This sediment would be readily moved downstream during periods of high runoff into perennial tributaries of the San Juan and Dolores Rivers and ultimately into the Colorado River. Additional inputs of sediment from shale derived soils are likely to increase salinity concentrations in all perennial drainages downstream and ultimately increase the salinity of the Colorado River. It is important to note, however, that the magnitude of the effects to surface water resources from future development activities depends not only on the success or failure of BMPs but also on the proximity of disturbances to drainage channels, slope aspect and gradient, degree and area of soil disturbance, soil character, duration of construction activities, and the timely implementation and success/failure of mitigation measures. Surface erosion would be greatest shortly after the start of construction activities and would likely decrease over time due to stabilization, reclamation, and revegetation efforts.

#### **4.3.1.3.4 Soil and Water Resources – Ground Water Quality**

Effects to groundwater resources could occur due to failure of well integrity, surface spills, or the loss of drilling, completion, and hydraulic fracturing fluids into groundwater. Chemical additives used in completion activities would be introduced into the producing formations. Loss of drilling fluids may occur at any time in the drilling process due to changes in porosity or other properties of the rock being drilled through. When this occurs, drilling fluids may be introduced into groundwater. Site specific conditions and drilling practices determine the probability of this occurrence and determine the groundwater resources that could be impacted. In addition to changing the producing formations' physical properties by increasing the flow of water, gas, and/or oil around the well bore, hydraulic fracturing can also introduce chemical additives into the producing formations. Types of chemical additives used in drilling activities may include acids, hydrocarbons, thickening agents, lubricants, and other additives that are operator and location specific. These additives are not always used in drilling activities and some are likely to be benign such as bentonite clay and sand. Concentrations of these additives also vary considerably and are not always known since different mixtures can be used for different purposes in the same oil and gas development and even in the same well bore.

If contamination of aquifers from oil and gas development occurs, changes in groundwater quality could impact downstream users diverting water from groundwater sources (e.g. domestic wells and springs). The severity of water quality effects to down gradient users would be subject to the type and volume of contaminant introduced. The timing of these effects would vary based in aquifer properties. Known water bearing zones in the project area are protected by drilling requirements, regulations, and industry practice. Typical best management practices aimed at protecting groundwater resources include construction of surface casing through all fresh water bearing zones (in some instances, intermediate casing is also added to further isolate fresh water ones), using only fresh water to drill through fresh water zones and constructing the surface casing, including gas blocker additives to cement jobs to effectively isolate fresh water zones, containment of drilling fluids in closed loop systems, implementation of approved disposal

methods for oil field waste products, and utilization of non-toxic chemicals in fracturing fluids (chemicals would not be toxic in the quantities utilized for the fracturing process). Operators would also be required to develop and implement a Spill Prevention Control and Countermeasures (SPCC) plan in accordance with 40 CFR Part 112 to mitigate against potential effects resulting from spills. With proper drilling and completion practices, potential contamination of groundwater resources will be minimized.

#### **4.3.1.4 Cultural**

##### **4.3.1.4.1 Cultural Sites**

The act of leasing oil and gas parcels has no direct potential for surface disturbance, and no effect to any known properties is anticipated from this action. Exploration and development activities that might be proposed as a result of leasing include those which could physically disturb cultural resource sites (e.g., building well pads, access roads, installation of pipelines, etc.). The size of well pads would depend on the number of wells and the type of drilling that is being done. Access roads, pipelines and other infrastructure would be developed during both exploration and development activities.

The BLM is required by statute and regulation to ensure that BLM initiated or BLM authorized actions do not inadvertently harm or destroy cultural resource values. Because most cultural resources are unidentified, irreplaceable, and highly sensitive to ground disturbance, it is necessary that the resources are properly identified, evaluated, and reported prior to any future activity that may affect their integrity or condition.

Before any APDs are approved for exploration or drilling, a Class III cultural resource survey would be undertaken to comply with Section 106 of the National Historic Preservation Act (NHPA). All parcels would be subject to Exhibit CO-39 to protect cultural resources. The TRFO requires a minimum 10 to 40-acre inventory block around proposed well locations, per its current standards and practices. This buffer typically allows for the relocation of proposed well pads more than 100 meters away from newly discovered sites potentially eligible for listing in the National Register of Historic Places (NRHP). Proposed construction or operation activities associated with development of these lease parcels would be relocated to avoid potentially-eligible sites by at least 100 meters, or that any related undertaking's Area of Potential Effect (APE) could be situated to avoid such sites.

##### **Mitigation**

Before any APDs are approved for exploration or drilling, a Class III cultural resource survey would be undertaken to comply with Section 106 of the National Historic Preservation Act (NHPA). All parcels would be subject to Exhibit CO-39 to protect cultural resources. The TRFO requires a minimum 10 to 40-acre inventory block around proposed well locations, per its current standards and practices. This buffer typically allows for the relocation of proposed well pads more than 100 meters away from newly discovered sites potentially eligible for listing in the National Register of Historic Places (NRHP). Proposed construction or operation activities associated with development of these lease parcels would be relocated to avoid potentially-

eligible sites by at least 100 meters, or that any related undertaking's Area of Potential Effect (APE) could be situated to avoid such sites.

If cultural resources are discovered during required Class III cultural resource inventories or during later construction or other operations, TRFO archaeologists would consider the potential of the proposed activity to affect the site type(s) present and the NRHP eligibility determinations of each site potentially affected to formulate mitigations. Where resource conflicts are discovered, mitigation would likely include the relocation of the proposed well pad(s) or infrastructure to avoid potentially Eligible sites by more than 100 meters, or relocation such that the Area of Potential Effect (APE) for the activity does not affect potentially-Eligible sites. Mitigation measures would be developed during the NEPA review of individual ground disturbing activities.

All lands offered for lease are subject to existing federal, state and local laws and regulations and to Exhibit CO-39 to protect cultural resources.

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

Because the proposed lease sale does not involve ground disturbance, the proposed undertaking will have no effect on historic properties. Any future development of parcels that are purchased as a result of the lease sale will be subject to additional Section 106 compliance, including identification, effects assessment, consultation, and if necessary, resolution of adverse effects.

As with cultural resources, there is some potential that any of the nominated parcels may contain Traditional Cultural Properties (TCP). These areas are associated with "cultural practices or beliefs of a living community that (a) are rooted in the community's history, and (b) are important in maintaining the continuing cultural identity of the community" (National Register Bulletin 38:1). TCPs are areas that are eligible for inclusion in the National Register of Historic Places. The recognition of TCPs is often difficult for non-Tribal members because Traditional in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice.

Exploration and development activities that might be proposed as a result of a lease includes those which could physically disturb Native American religious sites (e.g., building well pads, access roads, installation of pipelines, etc.). While leasing in itself does not threaten potential Native American religious sites and values found within the area, previous cases suggest that consultation with the involved tribes should be accomplished before the lease sale in order to determine Native American concerns. The lands managed by the BLM Tres Rios File Office are affiliated with 24 Native American tribes. BLM has sent informational letters to officials of these tribes (see Section 5.2) requesting their input, concerns and inviting those tribes to enter a consultation process if they so desire.

#### **Mitigation**

All lands are subject to Exhibit CO-39 to protect resources of cultural and religious significance. Mitigation of Native American Religious Concerns will be developed in consultation with the affected tribal entities and the appropriate state and federal agencies.

#### **4.3.1.5 Transportation**

While the act of leasing oil and gas parcels has no effects, subsequent exploration and development activities that might be proposed as a result of a lease could alter traffic or the transportation system. Because the development potential of the parcels is speculative, estimates of traffic, vehicle type or number of trips, access routes or road construction and maintenance requirements cannot be done until an APD is submitted and site-specific analysis is conducted.

The Stock Raising Homestead Act of 1916 and Mineral Leasing Act of 1920 provide for reasonable surface access for mineral exploration and extraction. Thus, if new roads, or upgrades to current roads, are necessary for access to leased minerals, they could be built whether on private, State or BLM surface. Subsequent development could also increase traffic on existing roads with possible delays in some areas depending on the proposed level of development.

Operators must make a good faith effort to notify the surface owner before entry and obtain a surface use agreement with the surface owner. This gives surface owners the opportunity to negotiate an agreement with preferred access routes and road construction and maintenance agreements, if desired. In addition, oil and gas traffic on county roads may need a county permit and road maintenance agreement.

#### **4.3.1.6 Air Quality and Climate**

The decision to offer the identified parcels for lease would not result in any direct emissions of air pollutants. However, the future development of these leases will result in emissions of criteria, HAP and GHG pollutants. The assessment of the relationship between GHG emissions and climate change is in a formative phase. While it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of making the proposed tracts available for leasing, some general assumptions can be made (e.g., selling the proposed tracts may lead to the drilling of new wells). Subsequent development of any leases sold would result in an incremental increase in overall emissions of pollutants, including GHGs.

While the act of leasing the parcels would produce no significant air quality effects, potential future development of the lease could lead to increases in area and regional emissions. Since it is unknown if the parcels would be developed, or the extent of the development, it is not possible to reasonably quantify potential air quality effects through dispersion modeling or another applicable method at this time. Additional air effects will be addressed in a subsequent analysis when lessees file an Application for Permit to Drill (APD). All proposed activities including, but not limited to, exploratory drilling activities would be subject to applicable local, State, and Federal air quality laws and regulations.

Any subsequent activity authorized after APD approval could include soil disturbances resulting from the construction of well pads, access roads, pipelines, power lines, and drilling. Any disturbance is expected to cause increases in fugitive dust and potentially inhalable particulate matter (specifically PM<sub>10</sub> and PM<sub>2.5</sub>) in the project area and immediate vicinity. Particulate matter, mainly dust, may become airborne when drill rigs and other vehicles travel on dirt roads

to drilling locations. Air quality may also be affected by exhaust emissions from engines used for drilling, transportation, gas processing, compression for transport in pipelines, and other uses. These sources will contribute to potential short and longer term increases in the following criteria pollutants: carbon monoxide, ozone (a secondary pollutant, formed photochemically by combining VOC and NO<sub>x</sub> emissions), nitrogen dioxide, and sulfur dioxide. These would also occur due to combustion of fossil fuels during exploration and development activities. Non-criteria pollutants (for which no national standards have been set) such as carbon dioxide, methane and nitrous oxide (GHGs), air toxics (e.g., benzene), and total suspended particulates (TSP), as well as effects to visibility, and atmospheric deposition, may also increase as a result of exploration and development.

During exploration and development, 'natural gas' may at times be flared and/or vented from conventional, coal bed methane, and shale wells. The gas is likely to contain volatile organic compounds that could also be emitted from reserve pits, produced water disposal facilities, and/or tanks located at the site. The development stage may likely include the installation of pipelines for transportation of raw product. New centralized collection, distribution and/or gas processing facilities may also be necessary.

The BLM will continue to evaluate the effects of oil and gas exploration and development on the global climate, and apply appropriate management techniques and BMPs to address changing conditions. Research has identified the general potential effects of anthropogenic GHG emissions and their effects on global climatic conditions. Anthropogenic GHGs differentially absorb and emit thermal radiation in the atmosphere and therefore may contribute incrementally to climate change. Changes in global temperatures and climate vary significantly with time, and are subject to a wide range of driving factors and complex interrelationships. Research on climate change effects is an emerging and rapidly evolving area of science, but given the lack of adequate analysis methods it is not possible to identify specific local, regional, or global climate change effects based on potential GHG emissions from any specific project's incremental contributions to the global GHG burden.

Substantial emission-generating activities cannot occur without further BLM analysis and approval of proposals for exploration and development operations. BLM will make its approval of these activities subject to conditions of approval addressing air pollutant emissions, as appropriate.

Protective/Mitigation Measures: Oil and or gas may be developed and produced subsequent to the proposed lease sale and ultimately be utilized to produce energy. The BLM will evaluate potential emissions of regulated air pollutants (including GHGs) associated with the development of the oil and gas resources in a subsequent analysis at the APD stage of the lease life cycle.

Conditions of approval (COAs) may be added at the permitting stage based on the review of site specific proposals, other applicable analysis of future exploration/development activities, or if new information becomes available and the mitigation proposed is supported by concise site specific NEPA analysis. COAs cannot take away lease rights or prevent development. All proposed activities including, but not limited to, exploration drilling activities would be subject



to local, State, Tribal, and Federal air quality laws and regulations.

Project specific emissions can generally be quantified and compared to overall sector, regional, or global (GHGs) estimates, as well as current air quality monitoring data and trends to provide some measures/context of the level and significance of any potential impacts. The BLM will continue to evaluate climatic variability and change in the future, and apply appropriate management techniques and policy to address changing conditions as developments occur.

#### **4.3.1.7 Socio-Economics and Environmental Justice**

No minority or low income populations would be directly affected in the vicinity of the proposed action.

The direct effect of the proposed action would be the payments received, if any, from the leasing of the 12,175 acres of federal mineral estate, or a subset thereof. Indirect effects that might result, should exploration and development of the leases occur, could include increased employment opportunities related to the oil and gas and service support industry in the region as well as the economic benefits to federal, state, and county governments related to lease payments, royalty payments, severance taxes, and property taxes. Other effects could include the potential for a small increase in transportation, roads and noise disturbance associated with development. These effects would apply to all public land users in the project area.

It is, however, highly speculative to predict exact effects of this action, as there are no guarantees that the leases will receive bids, that any leased parcels will be developed, or that any developed parcels will produce any fluid minerals. A rough estimate for the amount to be raised in the lease sale can be determined using recent lease sales in the field office as a guideline. Approximately 90% of all acres proposed for leasing are bid upon, with an average bid of approximately \$75 per acre. Using these values, the lease sale could result in \$821,813 in total bonus bids, though the actual amount may vary widely. To predict the results of future development would be too speculative in nature. Any APD received in would result in future NEPA analysis taking place, in which further socio-economic effects would be examined. Likewise, any negative socio-economic effects resulting from disturbance and drilling on leased parcels would also be examined in future site-specific analysis. It is unknown when, where, how, or if future surface disturbing activities associated with oil and gas exploration and development such as well sites, roads, facilities, and associated infrastructure would be proposed. It is also not known how many wells, if any, would be drilled and/or completed, the types of technologies and equipment would be used and the types of infrastructure needed for production of oil and gas. Thus, the types, magnitude and duration of potential impacts cannot be precisely quantified at this time, and would vary according to many factors.

#### **4.3.1.8 Recreation/Visual Resources**

Under the proposed action, there would be no direct effects associated with making the nominated parcels available for lease. If an APD is submitted, a site specific analysis for proposed development would be conducted. Indirect effects resulting from foreseeable physical development of the parcels would be anticipated in the form of roads and well pads construction.

The development of this infrastructure would result in short term (2-3 months, typically) effects such as noise, increased traffic, night time lighting, and other effects typical of construction sites. After initial development, the resultant well sites would transition into long term production mode and these effects would lessen substantially. In lease Parcel 6450 and 6471, these short term effects could affect the quality of the hunting experience (hunting success and naturalness of the setting). While hunting and other recreational pursuits likely occur on the private parcels, there is not enough information to analyze effects other than that they would likely be similar to those described for the publicly accessible surface acres.

In Parcel 6447 this could, dependent on actual siting, impact the visual quality of the San Juan Scenic Byway and the recreational experience for visitors to the adjacent Hesperus Ski Area. There are no special recreation management areas, where intensive use and associated setting character are managed for recreational experiences, which would be affected by this action.

The proposed action of selling oil and gas leases does not create a visual impact. The subsequent development of a lease could affect landscape character. For example, temporary or permanent facilities that have height, such as produced water, condensate or oil storage tanks could provide a strong vertical and horizontal visual contrast in form and line to the characteristic landscape and vegetation. Since oil and gas well locations cannot be accurately determined at the leasing stage, it is not possible to accurately predict the visual effects. A single well pad screened by terrain in an area absent of visual receptors may have low to negligible effects. The possible effects on nighttime lighting of drilling activities would have a temporary affect and would impact those in close proximity to the drilling activity. The Hesperus Ski Area, which is in close proximity to nominated lease Parcel 6447, and located directly adjacent to the San Juan Skyway Scenic Byway, provides night skiing, representing a similar night lighting impact within the existing characteristic landscape during the winter months.

### **Mitigation**

**Exhibit SJ-03** would be applied to Parcel 6450 in order to protect the visual value of Weber and Meneffee Wilderness Study Areas.

#### **4.3.1.9 Leasable Solid Minerals**

Coal resources cannot be fully developed in the area of existing wells. Potential conflicts between oil and coal leases are described on page 4-6 of the Oil and Gas Plan Amendment to the SJ/SM RMP/EIS (1991). If a coal mine extended into an oil and gas well, the well would be destroyed, or dangerous gasses could be released from the well bore into the mine, creating a hazardous working condition for miners. To avoid this, mines would have to deviate around existing wells, and the use of explosives would have to be limited in the area of wells. This would leave coal resources in the ground.

In addition to the above dangers, hydrologic fracturing may affect the integrity of a coal mine. Sometimes, an operator may choose to fracture the reservoir in order to improve permeability and therefore production. This is a common practice in tight shales, such as the Mancos Formation. The practice is commonly known as fracking. If fracking is conducted in the

vicinity of a coal mine, it may fracture the rock around the underground rooms. In such an event, working conditions in the mine could be hazardous.

**Mitigation #1:** Incorporate **Exhibit CO-01** as part of the terms for leases in the Hesperus Parcel Area: No surface occupancy would be allowed on leases within the area of federally leased coal lands where oil and gas development would likely be incompatible with coal extraction. This stipulation may be waived without a plan amendment if the lessee agrees that the drilling of a well will be subject to the following conditions: (1)(a) well must be plugged when the mine approaches within 500 feet of the well and re-entered or re-drilled upon completion of the mining operation; (b) well must be plugged in accordance with Mine Safety and Health Administration (formerly Mine Enforcement and Safety Administration) Informational Report 1052; (c) operation will provide accurate location of where the casing intercepts the coal by providing a directional and deviation survey of the well to the coal operator; or (2) relocate well into a permanent pillar or outside the area to be mined. A suspense of operations and production will be considered for the oil and gas lease only when a well is drilled and later plugged, and a new well or re-entry is planned when the mine moves through the location” (p. 17, San Juan/San Miguel Resource Management Plan Amendment, 1991).

### **4.3.2. Alternative B**

#### **4.3.2.1 Wildlife**

##### **4.3.2.1.1 Wildlife – Migratory Birds**

The direct and indirect effects of Alternative B on migratory birds would be similar to those described under the Proposed Action. It is assumed that development under Alternative B would be less than under the Proposed Action and therefore effects would be proportionately reduced due to reduced acres related to deferral of parcels or portions of parcels from steep slope concerns.

##### **4.3.2.1.2 Wildlife – Terrestrial**

The direct and indirect effects of Alternative B on terrestrial wildlife would be similar to those described under the Proposed Action. It is assumed that development under Alternative B would be less than under the Proposed Action and therefore effects would be proportionately reduced due to reduced acres related to deferral of parcels or portions of parcels from steep slope concerns.

##### **4.3.2.1.3 Wildlife – Aquatic**

Although the preferred action of leasing itself has no direct effects on aquatic wildlife in the area, future potential drilling could impact associated wildlife species and their habitat. Any effects to specific species would be addressed at the APD stage and appropriate mitigation would be developed. Potential future activities could have effects to connected, downstream habitats for aquatic wildlife (See Threatened, Endangered and Sensitive Species section for aquatic TES species). After reclamation, direct effects to wildlife would be minimal, except for periodic

disturbance by personnel if wells are productive.

#### **4.3.2.1. Threatened, Endangered and Sensitive Species—Wildlife**

The direct and indirect effects of the Alternative B on TES species would be similar to those described under the Proposed Action. It is assumed that development under Alternative B would be less than under the Proposed Action and therefore effects would be proportionately reduced. Additionally, through deferring of parcels or portions of parcels for steep slope concerns, effects to some species would be reduced.

Under the Alternative B, the Tres Rios Field Office is proposing the implementation of current guidelines for the management of the Gunnison sage grouse. The BLM currently adheres to the “Gunnison Sage-grouse Rangewide Conservation Plan” (RCP 2005) for management direction in regards to the grouse. Under this direction, it is recommended that a NSO be applied within 0.6 miles of a known Gunnison sage grouse lek site. The 1991 San Juan resource amendment plan states a one-quarter mile NSO around Lek sites. Additionally, a CSU will be applied to a four mile radius around known nest sites. These new recommendations are based on current research and are intended to benefit the overall success of this species.

#### **4.3.2.2 Threatened, Endangered and Sensitive Species—Plants**

As a result of the difference of this alternative from the Proposed Action having little relevance to special status plant habitat, the potential impact to special status plant species under this alternative would be identical to those described under Alternative A.

#### **4.3.2.3 Soil and Water Resources**

##### **4.3.2.3.1 Soil and Water Resources – Surface Geology/Soils**

Similar to the proposed action, Alternative B allows for the subsequent exploration and development of the lease. Exploration and development would have the same impact on soils as described above. This alternative includes a Lease Notice (SJ-LN-101) on slopes greater than 25% in addition to the CSU stipulation on slopes greater than 40%. This Lease Notice will mitigate the destabilization of soils and lessen the degree of runoff, erosion, and off-site sedimentation occurring from surface disturbing activities.

##### **4.3.2.3.2 Soil and Water Resources – Floodplains, Wetlands, and Riparian Zones**

The consequences of Alternative B are the same as the proposed action.

##### **4.3.2.3.3 Soil and Water Resources – Surface Water Quality**

Because Lease Notice LN-101 requires an engineering/reclamation plan will be developed for slopes greater than 25%, there will be less likelihood of soil destabilization resulting in increased runoff and erosion than under the proposed action alternative. This will decrease the amount of

sediment deposited into minor drainages which could be mobilized into larger drainages and ultimately into the Colorado River.

#### **4.3.2.3.4 Soil and Water Resources – Ground Water Quality**

The consequences of Alternative B are the same as the proposed action.

#### **4.3.2.4 Cultural**

##### **4.3.2.4.1 Cultural Sites**

The direct and indirect effects of Alternative B on cultural resources would be similar to those described under the Proposed Action. It is assumed that development under Alternative B would be less than under the Proposed Action and therefore impacts would be proportionately reduced.

**Mitigation:** Under Alternative B the mitigation would be the same as those described under the Proposed Action.

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

The direct and indirect effects of Alternative B on Native American religious concerns would be similar to those described under the Proposed Action. It is assumed that development under Alternative B would be less than under the Proposed Action and therefore effects would be proportionately reduced.

**Mitigation:** Under Alternative B, the mitigation would be the same as those described under the Proposed Action.

#### **4.3.2.5 Transportation**

The direct and indirect effects of Alternative B on transportation would be similar to those described under the Proposed Action. It is assumed that development under Alternative B would be less than under the Proposed Action and therefore effects would be proportionately reduced.

#### **4.3.2.6 Air Quality and Climate**

The direct and indirect effects of Alternative B on air quality and climate would be similar to those described under the Proposed Action.

#### **4.3.2.7 Socio-Economics and Environmental Justice**

The effects of Alternative B would be nearly identical to the proposed action; all socioeconomic effects would be minimally reduced in this alternative.

#### **4.3.2.8 Recreation and Visual Resources**

The direct effects of Alternative B on recreation would be identical to those described under the Proposed Action. The indirect effects associated with foreseeable physical development of the nominated parcels would differ from the Proposed Action with the deferral of 60 acres of Parcel 6447. This deferral would remove development potential from the foreground viewshed of the San Juan Scenic Byway, maintaining the visual quality within this nationally recognized scenic corridor. This alternative would also resolve potential conflict between future well pad development and recreational enjoyment of the adjoining Hesperus Ski Area.

#### **4.3.2.9 Leasable Solid Minerals**

The direct and indirect effects of Alternative B on leasable solid minerals would be similar to those described under the Proposed Action.

#### **4.3.3 Alternative C –No Action**

There would be no effects to Migratory birds or their habitat from the No Action Alternative. There would be no effects to terrestrial species or their habitat from the No Action Alternative. There would be no effects to aquatic wildlife species or their habitat from the No Action Alternative. There would be no effects to special status species or their habitat from the No Action Alternative. There would be no effects to special status plant species or their habitat from the No Action Alternative. There would be no effects to the soils from the No Action Alternative. There are no additional effects to cultural sites and Native American religious concerns from the No Action Alternative. There would be no effects to transportation from the No Action Alternative. Skiers at Hesperus Ski Area would not be impacted by the potential future development of a well pad directly adjacent to existing developed ski runs. There would be no effects to visual resources from the No Action Alternative. Visitors to the Scenic Byway would be able to enjoy the scenic values of the corridor in the same manner as they currently exist. There would be no additional effects to air quality or climate from the No Action Alternative. Under the no action alternative the proposed parcels will not be leased and therefore there would be no impacts to socio-economics as described under the proposed action. Leasing the parcels would not occur, nor would any subsequent potential development of the parcels occur.

### **4.4 Cumulative Effects Analysis**

“Cumulative effects” are those effects resulting from the incremental effect of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions.

#### **4.4.1 Wildlife**

The area analyzed for cumulative effects were determined based on the following criteria: (1) current development within the planning area, (2) projected development on existing federal leases within the planning area, (3) and projected development on future federal leases within the planning area. The area that was analyzed based on the above criteria include the Cherry Creek basin drainage and associated access roads; the Navajo river corridor adjacent and connected to

the proposed leases; and the area around parcel 6533, including the access roads leading to this parcel and squaw canyon below this parcel.

#### **4.4.1.1 Wildlife – Migratory Birds**

Oil and gas development of lands made available for lease or already leased is projected to continue over the next 15-years within the Tres Rios Field office management area. Existing and projected wells on all jurisdictions are factors that would contribute to the cumulative wildlife effects.

In total, it is estimated that surface disturbance would be approximately 4.4 acres per parcel. This combined potential surface disturbance from the 12 parcels being proposed equals 52.8 acres of surface disturbance.

Leasing and subsequent development of this lease parcel in combination with the past, present, and reasonably foreseeable actions is likely to contribute to a sustained reduction in the overall abundance of most affected species through direct and indirect effects, but it would not likely elevate cumulative effects to levels that would compromise the viability of any wildlife population or the utility of broader landscapes as habitat. The size and distribution of habitat patches ultimately created through lease development (instigating species-area effects) or whether barriers persist long enough to manifest inbreeding depression (reduced fitness of individuals and isolated populations) is subject to much speculation, but considering only the parcel recommended for leasing, in combination with the past, present, and reasonably foreseeable actions; these principles of fragmentation are not known to be operating at a level that prompts imminent concern.

The approval of future potential APDs could displace and affect migratory birds in the area. These actions when combined with the disturbances of the past, present and reasonably foreseeable future could contribute to the displacement or take of migratory birds across the proposed lease sale area. However, conditions of approval at the development phase are expected to minimize these effects.

#### **4.4.1.2 Wildlife – Terrestrial**

The effects resulting from development of existing leases to the species groups would be as described in the direct effects section above. Effects of concern would include direct loss of habitat, habitat fragmentation, loss of habitat effectiveness, and potential for increased wildlife harassment over a significantly larger area and across mixed jurisdictions.

Oil and gas development of existing leases in the Tres Rios Field Office management area would be intermingled with development of future leases. Effects resulting from development of future leases would be minimized by implementing the above wildlife stipulations to future leases, implementation of comparable stipulations attached to existing leases, and through implementation of standards and guidelines and referenced management direction.

Oil and gas development that may occur on private lands would contribute to adverse effects to wildlife by broadening the area of potential effects. LMP direction applicable to the species would not apply to private land/private mineral estate development, but newly promulgated State of Colorado regulations require lessee consultation with the Colorado Division of Wildlife prior to an undertaking. Nonetheless, private land development could compound effects such as habitat fragmentation and loss of habitat effectiveness that may occur to wildlife, particularly for elk and deer.

Another action of concern is accessing lease development sites within winter range, on or off of designated trails. On the public lands, significant areas of winter range would be closed to or have restricted over-snow winter travel. In addition, timing limitations on oil and gas development, road closures and utilization of remote telemetry to monitor wells would address winter habitat effectiveness. The degree of winter habitat effectiveness loss should not change overall elk population trends across the San Juan NF.

Human population in Dolores, San Miguel, and Montezuma Counties is projected to increase by a moderate to high rate over the life of the leases. This trend in human growth may result in increased fragmentation and the loss of habitat on private lands that surround the proposed lease parcels. The trend in human population growth may also result in an increased demand for goods and services from the public lands. These increases would place additional pressures on the public lands to supply the various types of habitat, and seclusion, required by the variety of wildlife species that utilize the planning area. Design criteria applicable to the species would not generally apply to private land development. This may compound effects such as habitat fragmentation and loss of habitat effectiveness that may occur to wildlife on federal lands.

Oil and gas development of lands made available for lease or already leased is projected to continue over the next 15-years within the Tres Rios Field Office management area. Existing and projected wells on all jurisdictions are factors that would contribute to the cumulative wildlife effects.

In total, it is estimated that surface disturbance would be approximately 4.4 acres per parcel. This combined potential surface disturbance from the 12 parcels being proposed equals 52.8 acres of surface disturbance.

Leasing and subsequent development of this lease parcel in combination with the past, present, and reasonably foreseeable actions is likely to contribute to a sustained reduction in the overall abundance of most affected species through direct and indirect effects, but it would not likely elevate cumulative effects to levels that would compromise the viability of any wildlife population or the utility of broader landscapes as habitat. The size and distribution of habitat patches ultimately created through lease development (instigating species-area effects) or whether barriers persist long enough to manifest inbreeding depression (reduced fitness of individuals and isolated populations) is subject to much speculation, but considering only the parcel recommended for leasing, in combination with the past, present, and reasonably foreseeable actions; these principles of fragmentation are not known to be operating at a level that prompts imminent concern.



The lease sale associated with the future potential APDs could affect terrestrial species found in the area. These actions when combined with the disturbances of the past, present and reasonably foreseeable future could contribute to the disturbance or temporary displacement of terrestrial species found in proposed lease sale area. However, conditions of approval at the development phase are expected to minimize these effects.

#### **4.4.1.3 Wildlife – Aquatic**

Oil and gas development of lands made available for lease or already leased is projected to continue over the next 15-years within the Tres Rios Field Office management area. Existing and projected wells on all jurisdictions are factors that would contribute to the cumulative wildlife effects.

In total, it is estimated that surface disturbance would be approximately 4.4 acres per parcel. This combined potential surface disturbance from the 12 parcels being proposed equals 52.8 acres of surface disturbance.

Leasing and subsequent development of this lease parcel in combination with the past, present, and reasonably foreseeable actions is likely to contribute to a sustained reduction in the overall abundance of most affected species through direct and indirect effects, but it would not likely elevate cumulative effects to levels that would compromise the viability of any wildlife population or the utility of broader landscapes as habitat. The size and distribution of habitat patches ultimately created through lease development (instigating species-area effects) or whether barriers persist long enough to manifest inbreeding depression (reduced fitness of individuals and isolated populations) is subject to much speculation, but considering only the parcel recommended for leasing, in combination with the past, present, and reasonably foreseeable actions; these principles of fragmentation are not known to be operating at a level that prompts imminent concern.

The lease sale associated with the future potential APDs could affect aquatic species found in the area. These actions when combined with the disturbances of the past, present and reasonably foreseeable future could contribute to the disturbance or temporary displacement of aquatic species found in proposed lease sale area. However, conditions of approval at the development phase are expected to minimize these effects.

#### **4.4.2 Threatened, Endangered, and Sensitive species**

##### **4.4.2.1 Wildlife – Threatened, Endangered and Sensitive species**

The Cumulative Effects Area was determined based on the following criteria: (1) current development within the planning area, (2) projected development on existing federal leases within the planning area, (3) and projected development on future federal leases within the planning area. The CEA analyzed based on the above criteria include the Cherry Creek basin drainage and associated access roads; the Navajo river corridor adjacent and connected to the

proposed leases; and the area around lease parcel 6533, including the access roads leading to this parcel and squaw canyon below this parcel.

Development of these lease parcels would contribute to activity simultaneous with and in addition to ongoing mineral development and recreation use in the TRFO. Initial disturbance to TES species (e.g., construction, drilling, and completion activities), as conditioned by timing limitations, CSU and COAs would be relatively localized and temporary. After these initial activities have subsided, human activity and effects of habitat fragmentation would continue throughout the production phase and persist for the life of well or field. The consequences of these influences on TES species would vary according to species-specific response through time as modified by habituation or circumstance, such as the use of access restrictions or BMPs that reduce the frequency and duration of well visitation.

Development would result in further unavoidable modifications and reductions in habitat communities. Roads and working surfaces of pads represent incremental accumulation of acreage removed from habitat base for the life of the well or field.

Leasing and subsequent development of this lease parcel in combination with the past, present, and reasonably foreseeable actions is likely to contribute to a sustained reduction in the overall abundance of most affected species through direct and indirect effects, but it would not likely elevate cumulative effects to levels that would compromise the viability of any wildlife population or the utility of broader landscapes as habitat. The size and distribution of habitat patches ultimately created through lease development (instigating species-area effects) or whether barriers persist long enough to manifest inbreeding depression (reduced fitness of individuals and isolated populations) is subject to much speculation, but considering only the parcel recommended for leasing, in combination with the past, present, and reasonably foreseeable actions; these principles of fragmentation are not known to be operating at a level that prompts imminent concern.

The only TES species that may be impacted with any cumulative foreseeable development scenarios is the Gunnison sage grouse. As described in the TES proposed action section above, parcel 6533 is almost entirely within what is mapped as historic habitat and will be considered potentially suitable habitat in the TRFO new RMP. This parcel could also be included in “critical habitat” if the US Fish and Wildlife service decides to list this species. It has been documented in numerous studies that grouse can be negatively impacted by habitat fragmentation and habitat loss due to oil and gas development, particularly during critical life function periods such as lekking, breeding and nesting. If parcels are proposed for development in occupied or potential habitat for the Gunnison sage grouse, extensive measures that may include no surface occupancy and timing limitations could be applied.

The combination of CSU and TL lease stipulations and complementing sighting criteria that attempt to minimize or avoid adverse modification of TES raptor nest habitat characteristics have been effective in preventing reproductive failures and maintaining the integrity of the nest substrate or woodland stand for subsequent nest attempts. Raptor nest surveys are required prior to project implementation in those areas potentially influenced by proposed development activities. Information on functional nest sites found in the course of survey are used as the basis

for developing siting alternatives or applying timing limitations that reduce the risk of nest activity disruptions that could result in reproductive failure or compromising the long-term utility of nest habitat.

The lease sale associated with the future potential APDs could affect threatened, endangered or candidate species found in the area. These actions when combined with the disturbances of the past, present and reasonably foreseeable future could contribute to the disturbance or temporary displacement of threatened, endangered or candidate species found in proposed lease sale area. However, conditions of approval at the development phase are expected to minimize these effects.

#### **4.4.2.2 Plants – Threatened, Endangered and Sensitive Species**

The geographic boundaries of a cumulative effect analysis for Special Status plant species having potential habitat within the leasing parcels would be the respective known ranges of the specific plants listed in the Table 3.1. However, because of a lack of data concerning known occurrences of these specific species in the project area, the surrogate of potential habitat based on where species have been found in similar habitats must be used. As a result of the rationale stated above, the geographic boundaries of such an analysis are identical to those resources, specifically Soil and Water Resources, which dictate the bounds of potential habitat. The site specific analysis which would precede any actual development of leased parcels will help define the CEA and effects based on actual biological surveys wherever possible.

See Cumulative Effects section of Soils and Water Resource section for potential cumulative effects to special status plant species habitats. The future effects from this lease sale as leases are developed, when combined with the past, present and reasonably foreseeable actions could increase effects from habitat fragmentation in the region through incremental increases in surface disturbing activities, resulting in cumulative effects to sensitive species and their habitats which may increase negative population trends in some species associated with the lease parcels area.

### **4.4.3 Soil and Water Resources**

#### **4.4.3.1 Soil and Water Resources – Surface Geology/Soils**

The cumulative impact area for the Chromo area lease parcel is located within the HUC5 Navajo River watershed. The cumulative impact area for the Hesperus lease parcels is located within the HUC5 Headwaters La Plata watershed. The cumulative impact area for the McKenna Peak area parcel is located within the HUC5 Disappointment watershed. The cumulative impact area for the Southwest Dove Creek parcel is located within the HUC5 Cross Canyon watershed. All watersheds are part of the upper Colorado River Basin.

Oil and gas development of lands made available for lease or already leased is projected to continue over the next 15-years within the Tres Rios Field Office management area. Existing and projected wells on all jurisdictions are factors that would contribute to the cumulative watershed effects. Other past actions include roads, livestock grazing, and activities on private land. The

subsequent development of leasing these areas, continued livestock grazing, and the continuation of activities on private lands are all part of the RFAS.

The combination of past, present, and RFAS combined with the effects of leasing development is unlikely to affect soil and water conditions within the Navajo River, Disappointment, and Cross Canyon watersheds. However, the combination of past, present, and RFAS in the La Plata watershed is likely to affect soil and water conditions due to the number, size, and location of the lease parcels even with the implementation of BMPs. The hazard of erosion and potential for surface runoff in the Hesperus lease parcel area is high to severe and approximately 36% the slopes are >40%. Cumulatively, these conditions have the potential to increase soil surface erosion and runoff which could alter stream channel morphology downstream of the project area. Changes to stream channel morphology such as lateral and vertical adjustment combined with inputs of sediment from upslope would degrade water quality conditions potentially to the point of not meeting water quality standards. Development in the Hesperus lease parcel area could also increase the potential for slope failure.

This lease sale, when combined with the past, present and reasonably foreseeable actions will elevate *potential* for the deterioration of soil health. Increased development of fluid minerals will result in a cumulative increase in surface disturbances as well as increase potential for leaks or spills during drilling and completion activities. The type of effects will be the same as described under environmental effects associated with the proposed action. However, the severity of the effects will be elevated with increased development in the watershed.

#### **4.4.3.2 Soil and Water Resources – Floodplains, Wetlands, and Riparian Zones**

The Cumulative Effects Area is determined by the location of the riparian areas located within each lease parcel. Oil and gas development of lands made available for lease or already leased is projected to continue over the next 15-years within the Tres Rios Field Office management area. Existing and projected wells on all jurisdictions are factors that would contribute to the cumulative watershed effects. Other past actions include roads, livestock grazing, and activities on private land. The subsequent development of leasing these areas, continued livestock grazing, and the continuation of activities on private lands are all part of the RFAS.

The combination of past, present, and RFAS combined with the effects of leasing development is unlikely to affect riparian areas. This is because of the NSO stipulation surrounding riparian areas.

Leasing the proposed parcel, in combination with the past, present and reasonably foreseeable actions would not have any cumulative effects on riparian zones. Effects on riparian zones should be limited due to existing lease stipulations and CSU restrictions that provide protection to these areas. Some effects could occur if creek crossings cannot be avoided during oil and gas exploration and development activities. Placement of facilities away from riparian areas located in or adjacent to the proposed lease parcel would reduce or eliminate direct effects.

#### **4.4.3.3 Soil and Water Resources – Surface Water Quality**

This lease sale, when combined with the past, present and reasonably foreseeable actions will elevate *potential* for the deterioration of surface water quality in the lease parcel areas. Increased development of fluid minerals will result in a cumulative increase in surface and subsurface disturbances as well as increase potential for leaks or spills during drilling and completion activities. The type of effects will be the same as described under environmental effects associated with the proposed action. However, the severity of the effects will be elevated with increased development in the watershed.

#### **4.4.3.4 Soil and Water Resources – Groundwater Quality**

This lease sale, when combined with the past, present and reasonably foreseeable actions will elevate *potential* for the deterioration of groundwater quality in the lease parcel areas. Increased development of fluid minerals will result in a cumulative increase in surface and subsurface disturbances as well as increase potential for leaks or spills during drilling and completion activities. The type of effects will be the same as described under environmental effects associated with the proposed action. However, the severity of the effects will be elevated with increased development in the watershed.

#### **4.4.4 Cultural**

##### **4.4.4.1 Cultural Sites**

The area of cumulative effects analysis is the lease parcel boundary because that is the area that could receive ground disturbance due to the proposed action. The cumulative effects of development of a particular lease may include secondary effects to cultural sites arising from increased visitation to the area, better access to previously inaccessible sites, increased erosion of surface properties from road and pad construction and the increased potential for inadvertent and/or deliberate vandalism of historic properties. The potential for and severity of these secondary effects cannot be analyzed at the lease stage, only when an APD or plan of development is submitted. Lessees must comply with existing laws and regulations, and any potential cumulative and secondary effects to cultural resources will be addressed when development plans are submitted for BLM approval.

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

Analysis of cumulative effects to Native American religious concerns cannot be addressed until the nature of both the development actions and the concerns are known. Since there are no known concerns for this area it is unlikely that any cumulative effects may occur. If, however, future consultations or investigations reveal the presence of such concerns, said concerns must be mitigated in consultation with the appropriate tribal, state and federal entities. Cumulative effects to Native American Religious Concerns may include visual degradation of a landscape important in traditional religious practice, interruption of accessibility to a particular site and a change or alteration in the character of a site, place or landscape important to traditional beliefs and practices.

Longer term cumulative effects are similar to the direct and indirect effects described previously. In addition, the cumulative effects of development of a particular lease may include secondary effects to cultural sites arising from increased visitation to the area, better access to previously inaccessible sites, increased erosion of surface properties from road and pad construction and the increased potential for inadvertent and/or deliberate vandalism of historic properties. The potential for and severity of these secondary effects cannot be analyzed at the lease stage, only when an APD or plan of development is submitted. Lessees must comply with existing laws and regulations, and any potential cumulative and secondary effects to cultural resources will be addressed when development plans are submitted for BLM approval.

The cumulative effects of Alternative B on cultural resources would be similar to those described under the Proposed Action.

#### **4.4.5 Transportation**

Development intensity, terrain, and proximity to main travel corridors, towns, and recreation facilities will greatly influence transportation effects. It is possible that post-lease industrial development could result in increased traffic. At the development phase, the surface use plan or conditions of approval can be used to minimize cumulative effects to highways, county roads, and existing and/or designated routes and minimize construction of new routes.

#### **4.4.6 Air Quality and Climate**

Due to the geographic extent of the nominated lease parcels, the cumulative effects area (CEA) development of the lease parcels may contribute incrementally to the deterioration of air quality in the region. Increased development of fluid minerals will result in a cumulative increase in surface and subsurface disturbances as well as increase emissions during drilling and completion activities and production. The type of effects will be the same as described under environmental effects associated with the proposed action. However, the severity of the effects could be elevated based on any contemporaneous development in surrounding areas.

An adequate regional air quality analysis was conducted for the TRFO under the San Juan Public Lands (SJPL) Draft EIS that is currently being prepared to accompany an updated RMP for the region. The analysis was conducted for an amended oil and gas RFD issued for the planning area in 2009 (incorporated information for GSGP - Gothic Shale Gas Play) using the far field CALPUFF dispersion model. The supplemental analysis included design features for new oil and gas development within the region that will be incorporated as conditions of approval for new oil and gas development activities within the region. The model predicted that BLM authorized activities at the project level would have minimal effects to area air quality (including Class I and sensitive Class II receptors) for the pollutants analyzed. Cumulatively, the model predicted the potential for effects to occur within the region, most often at the Mesa Verde National Park (Class I Air Quality Area).

These cumulative effects do not signify an actual violation. Rather they show that cumulative effects from existing sources may pose a problem and need to be carefully examined by the regulatory agencies prior to issuing permits for new construction in the area. Further, the effects

were predicted for the worst case emissions year which is typically the last inventory year analyzed where linear construction emissions/pace would occur with along with full field production operations. The analysis may or may not be entirely relevant for initial inventory years. Further, any variability or deviation in the pace of development or emissions inventory assumptions (including background sources) can have significant positive or negative effects that would ‘nudge’ the analysis as far as project level significance is concerned, and thus it is appropriate to require re-evaluation of project level emissions prior to authorizing future lease parcel development. For more detailed information on the modeling analysis, please see the air quality technical support document prepared for the SJPL RMP at the following link: [http://ocs.fortlewis.edu/forestPlan/supplement/SJPLC-TSD\\_Report\\_051111.pdf](http://ocs.fortlewis.edu/forestPlan/supplement/SJPLC-TSD_Report_051111.pdf)

#### **4.4.7 Socio Economics and Environmental Justice**

Any possible future development of fluid mineral resources resulting from this lease sale would be in addition to the current level of development, as examined in the affected environment

#### **4.4.8 Recreation/Visual Resources**

Due to the geographic extent of the nominated lease parcels, the CEA for visual/recreation resources is defined as all lands within the Tres Rios Field Office. Within this CEA area, there are about 605,000 acres (public and private surface, excluding tribal lands) of land currently leased for oil and gas development. This action would add up to 12,175 additional acres available for lease, resulting in cumulative total of 617,175 acres under lease. The direct and indirect effects described for visual resources/recreation above would then potentially cumulatively impact an additional 2% of lands within the TRFO.

Existing stipulations, found in the SJ/SM RMP and State Office Stipulations, do not address recreational resources beyond those designed to protect the viewsheds of the Dolores Canyon, Weber WSA, and Menefee WSA.

Mitigation SJ-03 would provide some visual protection for lands within parcel 6450, the viewshed of the Weber and/or Menefee WSAs.

The cumulative effects of Alternative B on visual resources would be similar to those described under the Proposed Action. However, the deferral of approximately 60 acres of parcel 6447 would slightly lessen the potential cumulative total of leased lands within the CEA.

#### **4.4.9 Leasable Solid Minerals**

The cumulative effects area consists of the Hesperus Parcel Area. This area was selected as it represents those proposed oil and gas leases that overlap known coal resources where economic activities have occurred. Historically, small mines were developed by and for local ranchers, farmers, and the town of Durango. At this time, most coal mines have been closed.

It is not known what the status is of the mines that closed prior to the mid- 1970s and early 1980s. At that time, the BLM and the State of Colorado developed authorities which require all

mining operations to be permitted and reclaimed. All mines that were permitted after this time either have been reclaimed or are undergoing reclamation. The one exception is the King Coal II Mine which is still active.

The operator of the King Coal II Mine has submitted an application to amend their coal lease. If approved, the amendment would expand the boundaries of Federal minerals which the existing operation may mine. The existing adit would be used. No new facilities or access would be associated with the amendment. At the close of the King Coal II Mine, all surface disturbance would be reclaimed. The only effects to coal resources are associated with conflicting oil and gas leases.

Under the Proposed Action with Mitigation #1, full development of coal resources would be allowed. Exploration and development activities would be allowed in areas of existing coal mines where possible. Under the Proposed Action with Mitigation #2, the integrity of coal mines would be protected from potential effects associated with ‘fracking’. Under the Proposed Action with Mitigation #3, coal resources would be fully developed. Oil and gas resources would be developed at a later time.

The past, present, and reasonably foreseeable development of coal is not expected to increase surface disturbance associated with the Proposed Action in the short-term. Over time, existing coal mine reclamation projects will be completed. Eventually, the King Coal II Mine will cease mining and complete reclamation of its surface facilities. Over the long term, cumulative surface disturbance is expected to decrease as reclamation of the mines is completed.

Under the No Action Alternative, coal resources would continue to be fully developed.

## **5.0 CONSULTATION AND COORDINATION**

### **5.1 Introduction**

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. The ID Team Checklist provides the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in sections 5.2 and 5.3 below.

### **5.2 Persons, Groups, and Agencies Consulted:**



**Table 5.2**

**List of all Persons, Agencies and Organizations Consulted for Purposes of this EA.**

<b>Name</b>	<b>Purpose &amp; Authorities for Consultation or Coordination</b>	<b>Findings &amp; Conclusions</b>
The Hopi Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Jicarilla Apache Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Navajo Nation	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Northern Ute Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Acoma	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Cochiti	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Isleta	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Jemez	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Laguna	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Nambe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Picuris	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Pojoaque	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of San Felipe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of San Juan	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Sandia	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	

Pueblo of Santa Ana	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Pueblo of Zia	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
San Ildefonso Pueblo	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Santa Clara Pueblo	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Santo Domingo Pueblo	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Southern Ute Indian Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Taos Pueblo	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Tesuque Pueblo	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Ute Mountain Ute Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	
Zuni Pueblo	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	

### 5.3 Summary of Public Participation

During preparation of the EA, the public was notified of the proposed action by posting a notice on June 11, 2012 on the Tres Rios Field Office website denoting the Oil & Gas Lease Sale scheduled for February 2013. The process used to involve the public will also include a comment period that will be tentatively starting on August 17, 2012. The public comment period will be open between August 17, 2012 and September 17, 2012 in association with the release of the preliminary Tres Rios February 2013 Oil and Gas Lease Sale EA.

### 5.4 List of Preparers

**Table 5.4 List of Preparers**

#### 5.4.1 BLM

Name	Title	Responsible for the Following Section(s) of this Document
Julie Bell	Archaeologist	Cultural
Jeff Christenson	Supervisory Outdoor Recreation Planner	Recreation and Visual Resources
Eric Freels	Wildlife Biologist	Wildlife
Helen Mary Johnson	Solid Minerals Geologist	Other Minerals
Tina Transtrom Kincaid	Planning and Environmental Coordinator	Environmental Coordination
Pam Leschak	Geologist	Technical Coordination and Quality Control

Chad Meister	Air Resource Specialist	Air Quality
John Pecor	Petroleum Engineer	Development Assumptions
Tracy Perfors	Team Lead	Technical Coordination and Quality Control, Noise and Transportation
Kylie Whited	Rangeland Management Specialist	Plants – Threatened, Endangered and Sensitive Species
Gina Jones	NEPA Coordinator	Environmental Coordination

#### 5.4.2 Non-BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Sara Brinton	Forest Service Botanist	Plants – Threatened, Endangered and Sensitive Species
Shauna Jensen	Forest Service Hydrologist	Soil and Water Resources
Tom Kochanski	Forest Service GIS	GIS

## 6.0 REFERENCES AND ACRONYMS

### 6.1 References Cited

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Colorado Department of Public Health and the Environment. 2010. Regulation No. 35. Available at <http://www.cdphe.state.co.us/regulations/wqccregs/index.html>

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Sawyer, H., Kauffman M.J., and R.M. Nielson. 2009. Influence of well pad activity on winter habitat selection patterns of mule deer. Journal of Wildlife Management 73:1052-1061.

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U.S. Department of Commerce. 2010. Census Bureau, County Business Patterns. <http://www.census.gov/econ/cbp/>

## **6.2 List of Acronyms**

APCD – Air Pollution Control Division  
APD – Application for Permit to Drill  
APE – Area of Potential Effect  
BCC – Birds of Conservation Concern  
BLM – Bureau of Land Management  
BMPs – Best Management Practices  
BOR – Bureau of Reclamation  
CAAQS – Colorado Ambient Air Quality Standards  
CDPHE – Colorado Department of Public Health and Environment  
CFR – Code of Federal Regulations  
CH<sub>4</sub> – Methane  
CEA – Cumulative Effect Area  
CO – Colorado or Carbon Monoxide  
CO<sub>2</sub> – Carbon Dioxide  
COA – Condition of Approval  
COGCC – Colorado Oil and Gas Conservation Commission  
CPW – Colorado Parks and Wildlife  
CSU – Controlled Surface Use

CX – Categorical Exclusion  
DR – Decision Record  
EA – Environmental Assessment  
EIS – Environmental Impact Statement  
EPA – Environmental Protection Agency  
FLPMA – Federal Land Policy and Management Act  
FONSI – Finding of No Significant Impact  
FOOGLRA - Federal Onshore Oil and Gas Leasing Reform Act  
FS – Forest Service  
FWS – Fish and Wildlife Service  
GHG – Greenhouse Gasses  
GIS – Geographic Information Systems  
GSGP – Gothic Shale Play Area  
HAPs – Hazardous Air Pollutants  
ID Team – Inter-disciplinary Team  
IM – Instruction Memorandum  
IPCC – Intergovernmental Panel on Climate Change  
LAU – Lynx Analysis Units  
LN – Lease Notice  
M&E – Monitoring and Evaluation  
MBTA – Migratory Bird Treaty Act  
MLA – Mineral Leasing Act  
MOU – Memorandum of Understanding  
NAAQS – National Ambient Air Quality Standards  
NCLS – Notice of Competitive Lease Sale  
NDIS – Natural Diversity Information Source  
NEPA – National Environmental Policy Act  
NFS – National Forest Service  
NFWF – National Fish and Wildlife Foundation  
NHPA – National Historic Preservation Act  
NO<sub>2</sub> – Nitrogen Dioxide  
NPS – National Park Service  
NRHP – National Registry of Historic Places  
NSO – No Surface Occupancy  
O<sub>3</sub> – Ozone  
PBA – Programmatic Biological Assessment  
PBO – Programmatic Biological Opinion  
PM – Particulate Matter  
RCP – Rangeland Conservation Plan  
RFAS – Reasonably Foreseeable Action Scenario  
RFD – Reasonable and Foreseeable Development  
RMP – Resource Management Plan  
ROD – Record of Decision  
ROW – Rights-of-Way  
SC – State Special Concern  
SJ/SM RMP – San Juan/San Miguel Resource Management Plan

SJPL – San Juan Public Lands  
SMU – Soil Map Unit  
SPCC – Spill Prevention, Control and Countermeasure  
ST – State Threatened  
SW – Southwest  
TCP – Traditional Cultural Properties  
TDS – Total Dissolved Salt  
TES – Threatened, Endangered, and Sensitive  
TL – Timing Limitation  
TRFO – Tres Rios Field Office  
TSP – Total Suspended Particulates  
VOCs – Volatile Organic Compounds  
WO – Washington Office  
WQCD – Water Quality Control Division  
WSA – Wilderness Study Area  
USDA – United States Department of Agriculture  
USDI – United States Department of Interior  
USFWS – United States Fish and Wildlife Service  
USGS – United States Geological Survey

Preliminary

**ATTACHMENT A**  
**Alternative A- Proposed Action**  
**Parcels Available for Lease with Applied Stipulations**

Preliminary

**PARCEL ID: 6401 SERIAL #:**

T. 0320N., R 0010E., NMPM  
Sec. 2: Lot 8;  
Sec. 11: Lot 1-4;

Archuleta County  
Colorado

23.810 Acres – Approximately 23.810 acres in private surface ownership

All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

The following lands are subject to Exhibit CO-09 to protect big game winter habitat:

T 32N R 1E Sec. 11 Lot 1-4

The following lands are subject to Exhibit CO-10 to protect elk calving:

T 32N R 1E Sec. 11 Lot 1-4

The following lands are subject to Exhibit CO-23 to protect bald eagle winter roosts:

T 32N R 1E Sec. 2 Lot 8

The following lands are subject to Exhibit SJ-07 to protect bald eagle winter concentration areas:

T 32N R 1E Sec. 2 Lot 8

**PARCEL ID: 6402 SERIAL #:**

T. 0320N., R 0020E., NMPM  
Sec. 2: Lot 1;  
Sec. 8: Lot 2,5;  
Sec. 9: Lot 5;

Archuleta County  
Colorado

47.720 Acres – Approximately 2.7 acres in BLM surface ownership, 45.02 acres in private surface ownership

All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-28 to protect riparian areas.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

The following lands are subject to Exhibit CO-23 to protect bald eagle winter roosts:

T 32N R 2E Sec. 8 Lot 2,5, Sec. 9 Lot 5

The following lands are subject to Exhibit SJ-07 to protect bald eagle winter concentration areas:

T 32N R 2E Sec. 8 Lot 2,5, Sec. 9 Lot 5

**PARCEL ID: 6433 SERIAL #:**

T. 0340N., R 012W., NMPM  
Sec. 2: Lot 2;  
Sec. 2: SWNE;



Sec. 3: Lot 2,4;  
Sec. 3: SWNE,SESW,SE;  
Sec. 10: Lot 3,4;  
Sec. 10: NE;  
Sec. 11: Lot 2;

La Plata County  
Colorado

664.910 Acres – Approximately 113 acres in BLM surface ownership, 551.91 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-09 to protect big game winter habitat:

T 34N R 12W Sec. 3 Lot 2,4, SWNE,SESW,SE, Sec. 10 Lot 4, NE

The following lands are subject to Exhibit CO-10 to protect elk calving:

T 34N R 12W Sec. 3 Lot 2,4, SWNE,SESW,SE, Sec. 10 Lot 4, NE

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 34N R 12W Sec. 2Lot 2, SWNE, Sec. 3 Lot 2,4, SESW, Sec. 10 Lot 4

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 34N R 12W Sec. 2 Lot 2, SWNE, Sec. 3 Lot 2, 4, SESW, Sec. 10 Lot 4

**PARCEL ID: 6434 SERIAL #:**

T. 0340N., R 011AW., NMPM  
Sec. 6: NESW,NWSE;

La Plata County  
Colorado

80.000 Acres – Approximately 80.0 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-27 to protect steep slopes.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

**PARCEL ID: 6447 SERIAL #:**

T. 0350N., R 0110W., NMPM  
Sec. 8: Lot 1-15;  
Sec. 8: NWSW;  
Sec. 9: Lot 1,6-9;  
Sec. 9: NWSW;  
Sec. 15: Lot 3-5;

Sec. 15: SWNE,N2SW;  
Sec. 17: Lot 7-11;  
Sec. 17: NE,N2SW,NWSE;  
Sec. 18: Lot 6,8;  
Sec. 18: NESW,N2SE;

La Plata County  
Colorado

1600.860 Acres – Approximately 833 acres in BLM surface ownership, 767.86 in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 35N R 11W Sec. 8 Lot 1-15, NWSW, Sec. 9 Lot 1, 6, 7, Sec. 15 Lot 3-5, SWNE, N2SW, Sec. 17  
Lot 3-8, NE, Sec. 18 Lot 6, 8, NESW, N2SE

The following lands are subject to Exhibit CO-28 to protect riparian areas:

T 35N R 11W Sec. 8 Lot 1, 10, 11, 12, 14, 15, NWSW, Sec. 15 Lot 3, 6, NESW Sec. 17 Lot 8, NE, NWSE

**PARCEL ID: 6448 SERIAL #:**

T. 0350N., R 0110W., NMPM

Sec. 19: Lot 3-5;  
Sec. 19: E2,E2SW;  
Sec. 20: SWNE,S2NW,W2SW;  
Sec. 30: Lot 1-4;  
Sec. 30: NE,E2NW,E2SW,N2SE;

La Plata County  
Colorado

1232.240 Acres – Approximately 1232.24 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 35N R 11W Sec. 19 Lot 4, SE, W2NE, SENE, SESW Sec. 20 SWNE,S2NW,W2SW, Sec. 30 Lot 1,2,  
E2NE, SWNE, N2SE, E2SW, E2NW

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 35N R 11W Sec. 19 Lot 4, SENE, W2NE, SE, E2SW Sec. 20 SWNE,S2NW,W2SW, Sec. 30 Lot 1,2, NE,  
N2SE, E2SW, NWSW, E2NW

**PARCEL ID: 6449 SERIAL #:**

T. 0340N., R 012AW., NMPM

Sec. 4: Lot 4;  
Sec. 4: SWNW;  
Sec. 5: Lot 1,4;  
Sec. 5: NWSW,S2SW;  
Sec. 6: Lot 3-6;  
Sec. 6: SENW,SESE;  
Sec. 7: Lot 3-6;  
Sec. 7: NE,SENW;  
Sec. 8: Lot 1-4;  
Sec. 8: S2NE,NW;  
Sec. 9: Lot 4;  
Sec. 9: NWNW,S2NW;

La Plata County  
Colorado

1393.200 Acres – Approximately 320 acres in BLM surface ownership, 1073.2 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-09 to protect big game winter habitat:

T 34N R 12W Sec. 4 Lot 4, Sec. 5 Lot 1, Sec. 7 Lot 3 Sec. 8 Lot 1, Sec. 9 Lot 4, NWNW

The following lands are subject to Exhibit CO-10 to elk calving:

T 34N R 12W Sec. 4 Lot 4, Sec. 5 Lot 1, Sec. 7 Lot 3 Sec. 8 Lot 1, Sec. 9 Lot 4, NWNW

The following lands are subject to Exhibit CO-23 to protect bald eagle winter roosts:

T 34N R 12W Sec. 7 Lot 3-6, NE, SENW

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 34N R 12W Sec. 4 Lot 4, Sec. 5 Lot 1, 4, NWSW, Sec. 6 Lot 3-6, SENW, SESE Sec. 7 Lot 3, 4, SENW  
N2NE, Sec. 9 SENW

The following lands are subject to Exhibit CO-28 to protect riparian areas:

T 34N R 12W Sec. 5 NWSW

The following lands are subject to Exhibit SJ-07 to protect bald eagle winter concentration areas.

T 34N R 12W Sec. 7 Lot 3-6, NE, SENW

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 34N R 12W Sec. 4 Lot 4, Sec. 5 Lot 1, 4, NWSW, Sec. 6 Lot 3-6, SENW, SESE, Sec. 7 Lot 3, 4, 5,  
SENWN2NE Sec. 9 SENW

**PARCEL ID: 6450 SERIAL #:**

T. 0350N., R 0120W., NMPM

Sec. 13: S2SW,NESE,SWSE;  
Sec. 14: SWNE,SW,W2SE,SESE;  
Sec. 15: NWNE,S2NW,S2;  
Sec. 17: W2W2;  
Sec. 18: Lot 3,4;  
Sec. 18: E2,SESW;  
Sec. 19: Lot 1-4;

Sec. 19: NE,E2NW,NESW,N2SE;  
Sec. 20: S2NE,NWNW,SESW,SE;

Montezuma and  
La Plata Counties  
Colorado

2369.810 Acres – Approximately 1259.66 acres in BLM surface ownership, 1110.15 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-27 to protect steep slopes.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

The following lands are subject to Exhibit CO-28 to protect riparian areas:  
T 35N R 12W Sec. 13 NESE, SWSE, Sec. 14 SWNE, Sec. 15 NWNE, Sec. 18 Lot 4  
The following lands are subject to Exhibit SJ-3 to protect visual values:  
T 35N R 12W, Sec. 18 Lot 3, 4, W2NE, W2SE, SESW, Sec. 19 Lot 1, 2

**PARCEL ID: 6451 SERIAL #:**

T. 0350N., R 0120W., NMPM  
Sec. 21: E2,S2NW,SW;  
Sec. 22: N2,SW,W2SE;  
Sec. 23: N2N2,SENE,SESE;  
Sec. 24: Lot 1;  
Sec. 24: NESW,S2SW,NWSE;  
Sec. 25: Lot 3-6;  
Sec. 25: S2SW,W2SE;  
Sec. 26: N2NE;  
Sec. 27: SESW,W2SE;

La Plata County  
Colorado

2000.000 Acres – Approximately 120 acres in BLM surface ownership, 1880 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-27 to protect steep slopes:  
T 35N R 12W Sec. 21 N2NE, SWNE, NESE, S2SE, SW, S2NW, Sec. 22 S2NE, SWNW, N2NW, W2SE,  
SWSec. 23 N2N2, SENE, SESE, Sec 24 Lot 1, NESW, S2SW, NWSE, Sec 25 Lot 3-6, S2SW, W2SE, Sec  
26 N2NE, Sec 27 SESW, W2SE  
The following lands are subject to Exhibit CO-28 to protect riparian areas:  
T 35N R 12W Sec. 22 NENE

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 35N R 12W Sec. 21 SWNE, N2NE, S, S2NW, Sec. 22 N2, SW, W2SE, Sec. 23 N2N2, SENE, SESE,  
Sec 24 Lot 1, NESW, S2SW, NWSE, Sec 25 Lot 3-6, S2SW, W2SE, Sec 26 N2NE, Sec 27 SESW, W2SE

**PARCEL ID: 6452 SERIAL #:**

T. 0350N., R 0120W., NMPM  
Sec. 28: E2,N2NW;  
Sec. 29: N2SW,SESW;  
Sec. 29: E2,E2NW,SWNW;  
Sec. 30: Lot 1,2;  
Sec. 30: E2NW,SESE;  
Sec. 31: Lot 3,4;  
Sec. 31: NESE;  
Sec. 32: NE,N2SE;  
Sec. 33: NWSW;

La Plata County  
Colorado

1562.000 Acres – Approximately 720 acres in BLM surface ownership, 842 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-09 to protect big game winter habitat:

T35N R 12W Sec. 28 E2, N2NW, Sec. 32 NENE, Sec. 33 NWSW

The following lands are subject to Exhibit CO-10 to protect elk calving:

T35N R 12W Sec. 28 E2, N2NW, Sec. 32 NENE, Sec. 33 NWSW

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 35N R 12W Sec. 28 N2NE, SWNE, N2NW, Sec. 29 E2, N2SW, SESW, E2NW, SWNW, Sec. 30 Lot  
1,2, E2NW, SESE, Sec. 31 Lot 3, 4, NESE, Sec. 32 NE, N2SE

The following lands are subject to Exhibit CO-28 to protect riparian areas:

T 35N R 12W Sec. 31 Lot 3, 4, NESE

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 35N R 12W Sec. 28 N2NE, SWNE, N2NW, Sec. 29 E2, N2SW, SESW, E2NW, SWNW, Sec. 30 Lot  
1,2, E2NW, SESE, Sec. 31 Lot 3, 4, NESE, Sec. 32 NE, N2SE Sec. 33 NWSW

**PARCEL ID: 6471 SERIAL #:**

T. 0420N., R 0140W., NMPM  
Sec. 17: NE,NENW,E2SW,SE;  
Sec. 20: NE,NENW;  
Sec. 21: N2,NESW,NWSE;

San Miguel County  
Dolores County  
Colorado

1040.000 Acres – Approximately 1040 acres in State surface ownership

All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 42N R 14W Sec. 17 NENE, S2NE, NENW, E2SW, SE, Sec. 20 NE, NENW, Sec. 21 N2NE, SWNE, NESW, NWSE, E2NW,

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 42N R 14W Sec. 17 NE, NENW, E2SW, SE, Sec. 20 NE, NENW, Sec. 21 NE, NESW, NWSE, E2NW

**PARCEL ID: 6533 SERIAL #:**

T. 0390N., R 0200W., NMPM  
Sec. 25: TR 62;

Dolores County  
Colorado

160.000 Acres – Approximately 160 acres in private surface ownership

All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-06 to protect Mexican Spotted Owl roost and nest sites.  
All lands are subject to Exhibit CO-15 to protect grouse winter habitat.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-21 to protect Mexican Spotted Owl nesting and fledgling habitat.  
All lands are subject to Exhibit CO-30 to protect nesting grouse habitat.  
All lands are subject to Exhibit CO-34 to protect TES species.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit CO-40 to protect sage grouse habitat.

**ATTACHMENT B**  
**Deferred Portions of Parcels**

Preliminary

**PARCEL ID: 6447 SERIAL #:**

T. 0350N., R 0110W., NMPM

Sec. 9: Lot 9;

Sec. 15: SWNE,

La Plata County  
Colorado

Preliminary



**ATTACHMENT C**  
**Alternative B**  
**Parcels Available for Lease with Deferred Portions, and**  
**Applied Stipulations**

**PARCEL ID: 6401 SERIAL #:**

T. 0320N., R 0010E., NMPM  
Sec. 2: Lot 8;  
Sec. 11: Lot 1-4;

Archuleta County  
Colorado

23.810 Acres – Approximately 23.810 acres in private surface ownership

All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

The following lands are subject to Exhibit CO-09 to protect big game winter habitat:

T 32N R 1E Sec. 11 Lot 1-4

The following lands are subject to Exhibit CO-10 to protect elk calving:

T 32N R 1E Sec. 11 Lot 1-4

The following lands are subject to Exhibit CO-23 to protect bald eagle winter roosts:

T 32N R 1E Sec. 2 Lot 8

The following lands are subject to Exhibit SJ-07 to protect bald eagle winter concentration areas:

T 32N R 1E Sec. 2 Lot 8

**PARCEL ID: 6402 SERIAL #:**

T. 0320N., R 0020E., NMPM  
Sec. 2: Lot 1;  
Sec. 8: Lot 2,5;  
Sec. 9: Lot 5;

Archuleta County  
Colorado

47.720 Acres – Approximately 2.7 acres in BLM surface ownership, 45.02 acres in private surface ownership

All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-28 to protect riparian areas.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

The following lands are subject to Exhibit CO-23 to protect bald eagle winter roosts:

T 32N R 2E Sec. 8 Lot 2,5, Sec. 9 Lot 5

The following lands are subject to Exhibit SJ-07 to protect bald eagle winter concentration areas:

T 32N R 2E Sec. 8 Lot 2,5, Sec. 9 Lot 5

**PARCEL ID: 6433 SERIAL #:**

T. 0340N., R 012W., NMPM  
Sec. 2: Lot 2;  
Sec. 2: SWNE;

Sec. 3: Lot 2,4;  
Sec. 3: SWNE,SESW,SE;  
Sec. 10: Lot 3,4;  
Sec. 10: NE;  
Sec. 11: Lot 2;

La Plata County  
Colorado

664.910 Acres – Approximately 113 acres in BLM surface ownership, 551.91 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-09 to protect big game winter habitat:

T 34N R 12W Sec. 3 Lot 2,4, SWNE,SESW,SE, Sec. 10 Lot 4, NE

The following lands are subject to Exhibit CO-10 to protect elk calving:

T 34N R 12W Sec. 3 Lot 2,4, SWNE,SESW,SE, Sec. 10 Lot 4, NE

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 34N R 12W Sec. 2Lot 2, SWNE, Sec. 3 Lot 2,4, SESW, Sec. 10 Lot 4

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 34N R 12W Sec. 2 Lot 2, SWNE, Sec. 3 Lot 2, 4, SESW, Sec. 10 Lot 4

**PARCEL ID: 6434 SERIAL #:**

T. 0340N., R 011AW., NMPM  
Sec. 6: NESW,NWSE;

La Plata County  
Colorado

80.000 Acres – Approximately 80.0 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-27 to protect steep slopes.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

**PARCEL ID: 6447 SERIAL #:**

T. 0350N., R 0110W., NMPM  
Sec. 8: Lot 1-15;  
Sec. 8: NWSW;  
Sec. 9: Lot 1,6-8;  
Sec. 9: NWSW;  
Sec. 15: Lot 3-5;

Sec. 15: N2SW;  
Sec. 17: Lot 7-11;  
Sec. 17: NE,N2SW,NWSE;  
Sec. 18: Lot 6,8;  
Sec. 18: NESW,N2SE;

La Plata County  
Colorado

1600.860 Acres – Approximately 833 acres in BLM surface ownership, 767.86 in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 35N R 11W Sec. 8 Lot 1-15, NWSW, Sec. 9 Lot 1, 6, 7, Sec. 15 Lot 3-5, SWNE, N2SW, Sec. 17  
Lot 3-8, NE, Sec. 18 Lot 6, 8, NESW, N2SE

The following lands are subject to Exhibit CO-28 to protect riparian areas:

T 35N R 11W Sec. 8 Lot 1, 10, 11, 12, 14, 15, NWSW, Sec. 15 Lot 3, 6, NESW Sec. 17 Lot 8, NE, NWSE

**PARCEL ID: 6448 SERIAL #:**

T. 0350N., R 0110W., NMPM  
Sec. 19: Lot 3-5;  
Sec. 19: E2,E2SW;  
Sec. 20: SWNE,S2NW,W2SW;  
Sec. 30: Lot 1-4;  
Sec. 30: NE,E2NW,E2SW,N2SE;

La Plata County  
Colorado

1232.240 Acres – Approximately 1232.24 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 35N R 11W Sec. 19 Lot 4, SE, W2NE, SENE, SESW Sec. 20 SWNE,S2NW,W2SW, Sec. 30 Lot 1,2,  
E2NE, SWNE, N2SE, E2SW, E2NW

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 35N R 11W Sec. 19 Lot 4, SENE, W2NE, SE, E2SW Sec. 20 SWNE,S2NW,W2SW, Sec. 30 Lot 1,2, NE,  
N2SE, E2SW, NWSW, E2NW

**PARCEL ID: 6449 SERIAL #:**

T. 0340N., R 012AW., NMPM

Sec. 4: Lot 4;  
Sec. 4: SWNW;  
Sec. 5: Lot 1,4;  
Sec. 5: NWSW,S2SW;  
Sec. 6: Lot 3-6;  
Sec. 6: SENW,SESE;  
Sec. 7: Lot 3-6;  
Sec. 7: NE,SENW;  
Sec. 8: Lot 1-4;  
Sec. 8: S2NE,NW;  
Sec. 9: Lot 4;  
Sec. 9: NWNW,S2NW;

La Plata County  
Colorado

1393.200 Acres – Approximately 320 acres in BLM surface ownership, 1073.2 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-09 to protect big game winter habitat:

T 34N R 12W Sec. 4 Lot 4, Sec. 5 Lot 1, Sec. 7 Lot 3 Sec. 8 Lot 1, Sec. 9 Lot 4, NWNW

The following lands are subject to Exhibit CO-10 to elk calving:

T 34N R 12W Sec. 4 Lot 4, Sec. 5 Lot 1, Sec. 7 Lot 3 Sec. 8 Lot 1, Sec. 9 Lot 4, NWNW

The following lands are subject to Exhibit CO-23 to protect bald eagle winter roosts:

T 34N R 12W Sec. 7 Lot 3-6, NE, SENW

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 34N R 12W Sec. 4 Lot 4, Sec. 5 Lot 1, 4, NWSW, Sec. 6 Lot 3-6, SENW, SESE Sec. 7 Lot 3, 4, SENW  
N2NE, Sec. 9 SENW

The following lands are subject to Exhibit CO-28 to protect riparian areas:

T 34N R 12W Sec. 5 NWSW

The following lands are subject to Exhibit SJ-07 to protect bald eagle winter concentration areas.

T 34N R 12W Sec. 7 Lot 3-6, NE, SENW

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 34N R 12W Sec. 4 Lot 4, Sec. 5 Lot 1, 4, NWSW, Sec. 6 Lot 3-6, SENW, SESE, Sec. 7 Lot 3, 4, 5,  
SENWN2NE Sec. 9 SENW

**PARCEL ID: 6450 SERIAL #:**

T. 0350N., R 0120W., NMPM

Sec. 13: S2SW,NESE,SWSE;  
Sec. 14: SWNE,SW,W2SE,SESE;  
Sec. 15: NWNE,S2NW,S2;  
Sec. 17: W2W2;  
Sec. 18: Lot 3,4;  
Sec. 18: E2,SESW;  
Sec. 19: Lot 1-4;

Sec. 19: NE,E2NW,NESW,N2SE;  
Sec. 20: S2NE,NWNW,SESW,SE;

Montezuma and  
La Plata Counties  
Colorado

2369.810 Acres – Approximately 1259.66 acres in BLM surface ownership, 1110.15 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-27 to protect steep slopes.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit LN-101 to protect slopes 25-40%.

The following lands are subject to Exhibit CO-28 to protect riparian areas:  
T 35N R 12W Sec. 13 NESE, SWSE, Sec. 14 SWNE, Sec. 15 NWNE, Sec. 18 Lot 4  
The following lands are subject to Exhibit SJ-3 to protect visual values:  
T 35N R 12W, Sec. 18 Lot 3, 4, W2NE, W2SE, SESW, Sec. 19 Lot 1, 2

**PARCEL ID: 6451 SERIAL #:**

T. 0350N., R 0120W., NMPM  
Sec. 21: E2,S2NW,SW;  
Sec. 22: N2,SW,W2SE;  
Sec. 23: N2N2,SENE,SESE;  
Sec. 24: Lot 1;  
Sec. 24: NESW,S2SW,NWSE;  
Sec. 25: Lot 3-6;  
Sec. 25: S2SW,W2SE;  
Sec. 26: N2NE;  
Sec. 27: SESW,W2SE;

La Plata County  
Colorado

2000.000 Acres – Approximately 120 acres in BLM surface ownership, 1880 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-27 to protect steep slopes:  
T 35N R 12W Sec. 21 N2NE, SWNE, NESE, S2SE, SW, S2NW, Sec. 22 S2NE, SWNW, N2NW, W2SE,  
SWSec. 23 N2N2, SENE, SESE, Sec 24 Lot 1, NESW, S2SW, NWSE, Sec 25 Lot 3-6, S2SW, W2SE, Sec  
26 N2NE, Sec 27 SESW, W2SE  
The following lands are subject to Exhibit CO-28 to protect riparian areas:  
T 35N R 12W Sec. 22 NENE

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 35N R 12W Sec. 21 SWNE, N2NE, S, S2NW, Sec. 22 N2, SW, W2SE, Sec. 23 N2N2, SENE, SESE,  
Sec 24 Lot 1, NESW, S2SW, NWSE, Sec 25 Lot 3-6, S2SW, W2SE, Sec 26 N2NE, Sec 27 SESW, W2SE

**PARCEL ID: 6452 SERIAL #:**

T. 0350N., R 0120W., NMPM  
Sec. 28: E2,N2NW;  
Sec. 29: N2SW,SESW;  
Sec. 29: E2,E2NW,SWNW;  
Sec. 30: Lot 1,2;  
Sec. 30: E2NW,SESE;  
Sec. 31: Lot 3,4;  
Sec. 31: NESE;  
Sec. 32: NE,N2SE;  
Sec. 33: NWSW;

La Plata County  
Colorado

1562.000 Acres – Approximately 720 acres in BLM surface ownership, 842 acres in private surface ownership

All lands are subject to Exhibit CO-01 to protect coal deposits.  
All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-08 to protect special status plant species.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-09 to protect big game winter habitat:

T35N R 12W Sec. 28 E2, N2NW, Sec. 32 NENE, Sec. 33 NWSW

The following lands are subject to Exhibit CO-10 to protect elk calving:

T35N R 12W Sec. 28 E2, N2NW, Sec. 32 NENE, Sec. 33 NWSW

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 35N R 12W Sec. 28 N2NE, SWNE, N2NW, Sec. 29 E2, N2SW, SESW, E2NW, SWNW, Sec. 30 Lot  
1,2, E2NW, SESE, Sec. 31 Lot 3, 4, NESE, Sec. 32 NE, N2SE

The following lands are subject to Exhibit CO-28 to protect riparian areas:

T 35N R 12W Sec. 31 Lot 3, 4, NESE

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 35N R 12W Sec. 28 N2NE, SWNE, N2NW, Sec. 29 E2, N2SW, SESW, E2NW, SWNW, Sec. 30 Lot  
1,2, E2NW, SESE, Sec. 31 Lot 3, 4, NESE, Sec. 32 NE, N2SE Sec. 33 NWSW

**PARCEL ID: 6471 SERIAL #:**

T. 0420N., R 0140W., NMPM  
Sec. 17: NE,NENW,E2SW,SE;  
Sec. 20: NE,NENW;  
Sec. 21: N2,NESW,NWSE;

San Miguel County  
Dolores County  
Colorado

1040.000 Acres – Approximately 1040 acres in State surface ownership

All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit CO-27 to protect steep slopes:

T 42N R 14W Sec. 17 NENE, S2NE, NENW, E2SW, SE, Sec. 20 NE, NENW, Sec. 21 N2NE, SWNE, NESW, NWSE, E2NW,

The following lands are subject to Exhibit LN-101 to protect slopes 25-40%:

T 42N R 14W Sec. 17 NE, NENW, E2SW, SE, Sec. 20 NE, NENW, Sec. 21 NE, NESW, NWSE, E2NW

**PARCEL ID: 6533 SERIAL #:**

T. 0390N., R 0200W., NMPM  
Sec. 25: TR 62;

Dolores County  
Colorado

160.000 Acres – Approximately 160 acres in private surface ownership

All lands are subject to Exhibit CO-03 to protect raptor nests.  
All lands are subject to Exhibit CO-04 to protect bald eagle roost and nests sites.  
All lands are subject to Exhibit CO-06 to protect Mexican Spotted Owl roost and nest sites.  
All lands are subject to Exhibit CO-15 to protect grouse winter habitat.  
All lands are subject to Exhibit CO-18 to protect raptor nesting and fledgling habitat.  
All lands are subject to Exhibit CO-21 to protect Mexican Spotted Owl nesting and fledgling habitat.  
All lands are subject to Exhibit CO-30 to protect nesting grouse habitat.  
All lands are subject to Exhibit CO-34 to protect TES species.  
All lands are subject to Exhibit CO-39 to protect cultural resources.  
All lands are subject to Exhibit CO-40 to protect sage grouse habitat.



**ATTACHMENT D**

**Exhibits, Stipulations, Lease Notices**

Preliminary

## EXHIBIT CO-01

### NO SURFACE OCCUPANCY STIPULATION

No surface occupancy would be allowed on leases within the area of federally leased coal lands where oil and gas development would likely be incompatible with coal extraction.

This stipulation may be waived without a plan amendment if the lessee agrees that the drilling of a well will be subject to the following conditions: (1)(a) well must be plugged when the mine approaches within 500 feet of the well and re-entered or re-drilled upon completion of the mining operation; (b) well must be plugged in accordance with Mine Safety and Health Administration (formerly Mine Enforcement and Safety Administration) Informational Report 1052; (c) operator will provide accurate location of where the casing intercepts the coal by providing a directional and deviation survey of the well to the coal operator; or (2) relocate well into a permanent pillar or outside the area to be mined. A suspension of operations and production will be considered for the oil and gas lease only when a well is drilled and later plugged, and a new well or re-entry is planned when the mine moves through the location.

Preliminary

## EXHIBIT CO-03

### NO SURFACE OCCUPANCY STIPULATION

Raptors (includes golden eagle and osprey; all accipiters; falcons except Kestrel; butteos; and owls). Raptors that are listed and protected by the Endangered Species Act are addressed separately. NSO within one- eighth mile radius of nest site.

Exception for raptor nest site. The NSO area may be altered depending on the active status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site.

Preliminary

EXHIBIT CO-04

NO SURFACE OCCUPANCY STIPULATION

Bald Eagle NSO within one-quarter mile radius of the roost or nest site.

Exception for bald eagle roost site. The NSO applies to the essential features of the winter roost site complex. The NSO area may be altered depending on the active status of the roost or the geographical relationship of topographic barriers and vegetation screening.

There are no exceptions currently identified for nest sites.

Preliminary

EXHIBIT CO-06

NO SURFACE OCCUPANCY STIPULATION

Mexican Spotted Owl NSO within one-quarter mile radius of the confirmed roost site and nesting site.

No specific exception criteria are currently identified.

Preliminary

EXHIBIT CO-08

NO SURFACE OCCUPANCY STIPULATION

NSO on habitat areas with special status plant species (Includes federally-listed and proposed species for listing and candidate species.)

Exception for special status plant species habitat. The NSO may be altered after important factors are considered in a site-specific impact analysis such as the type and amount of surface disturbance, plant frequency and density, and the relocation of disturbances.

Preliminary

## EXHIBIT CO-09

### TIMING LIMITATION STIPULATION

Big game species (includes species of mule deer, elk, pronghorn antelope, and bighorn sheep).  
Note: Crucial winter habitat includes severe big game winter range or other definable winter ranges as mapped by the Colorado Division of Wildlife.

#### Big Game Crucial Winter Habitat - December 1 to April 30

Exception for big game crucial winter habitat. Under mild winter conditions, the last 60 days of the seasonal limitation period may be suspended. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the crucial winter range during the winter months.

Exception for big game crucial winter habitat. This limitation may or may not apply to work requiring a Sundry Notice pending environmental analysis of any operational or production aspects.

Preliminary

EXHIBIT CO-10

TIMING LIMITATION STIPULATION

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

April 16 through June 30

For the purpose of (reasons):

To protect elk calving

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of the stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

Preliminary



EXHIBIT CO-15

TIMING LIMITATION STIPULATION

Grouse (includes sage grouse, mountain sharp-tailed, and lesser and greater prairie chickens)

Sage grouse crucial winter habitat – December 16 to March 15

No specific exception criteria are currently identified.

Preliminary

## EXHIBIT CO-18

### TIMING LIMITATION STIPULATION

Raptor nesting and fledgling habitat (includes the golden eagle and all accipiters; falcons, except the kestrels\*; all butteos; and owls except Mexican spotted owls, see stipulation *CO-21*, below)  
- February 1 to August 15. Raptors that are listed and protected by the Endangered Species Act are addressed separately.

This seasonal limitation applies to a one-quarter mile buffer zone around the nest site.

\*Kestrels are very adaptable to nest in a variety of habitats and their populations are stable and widespread..

Preliminary

## EXHIBIT CO-21

### TIMING LIMITATION STIPULATION

Mexican Spotted Owl nesting and fledgling habitat - February 1 to July 31.

The Mexican spotted owl has been petitioned for listing as a threatened or endangered species to U.S. Fish and Wildlife Service. Subject to the petition determination, the following habitat management guidelines and restrictions will be used to protect the Mexican spotted owl. These guidelines are adopted from the interim timber harvest management guidelines issued by the Forest Service, Southwest Region (*Federal Register*, Vol. 54, No.124, June 29, 1989).

Mexican spotted owl habitat is restricted by use of a timing limitation applied to core areas within the owl habitat territory. The territories are by definition of two types: (1) territory in which an owl(s) has been spotted, but no nests or roosts have been confirmed, and (2) territory in which there is confirmed nesting, feeding, and roosting activity. The territory of a Mexican spotted owl is thought to be about 2,000 acres and does not overlap with another individual's (or pair's) territory. Within the territory is a core area of 450 acres where there have been sightings only ([1] above), or 1,480 acres where there are confirmed nests and/or roosts ([2] above). The timing restriction from February 1 to July 31 is applied to the core areas (450 or 1,480 acres). A proposed oil and gas operation within the remainder of the territory (2,000 acres minus 450 or 1,480 acres) will be analyzed prior to permit approval and mitigated for compatibility with the owl habitat.

No specific exception criteria are currently identified.

EXHIBIT CO-23

TIMING LIMITATION STIPULATION

Winter Roost Site - November 16 to April 15. Restriction for bald eagle winter roost site.

The sensitivity of bald eagles to human disturbance activities requires a one-half mile buffer area around the roost site to avoid relocation to less suitable areas.

Exception for winter roost habitat. If there is partial or complete visual screening of the area of activity, the primary zone around the roost site may be reduced to one-quarter mile.

Preliminary

## EXHIBIT CO-27

### CONTROLLED SURFACE USE STIPULATION

Prior to surface disturbance on Slopes of, or greater than, 40 percent, an engineering/reclamation plan must be approved by the Authorized Officer. Such plans must demonstrate how the following will be accomplished:

- a. Site productivity will be restored.
- b. Surface runoff will be adequately controlled.
- c. Off-site areas will be protected from accelerated erosion such as drilling, gullying, piping, and mass wasting.
- d. Surface-disturbing activities will not be conducted during extended wet periods.
- e. Construction will not be allowed when soils are frozen.

No specific exception criteria are currently identified.

Preliminary

## EXHIBIT CO-28

### CONTROLLED SURFACE USE STIPULATION

For the protection of perennial water impoundments and streams, and/or riparian/wetland vegetation zones, activities associated with oil and gas exploration and development including roads, transmission lines, storage facilities, are restricted to an area beyond the riparian vegetation zone.

Exceptions: This stipulation may be excepted subject to an on-site impact analysis with consideration given to degree of slope, soils, importance to the amount and type of wildlife and fish use, water quality, and other related resource values.

This stipulation will not be applied where the Authorized Officer determines that relocation up to 200 meters can be applied to protect the riparian system during well sighting.

Preliminary

## EXHIBIT CO-30

### LEASE NOTICE

In order to protect nesting grouse species, surface-disturbing activities proposed during the period between March 1 and June 30 will be relocated, consistent with lease rights granted and section 6 of standard lease terms, out of grouse nesting habitat.

Sage grouse nesting habitat is described as sage stands with sagebrush plants between 30 and 100 centimeters in height and a mean canopy cover between 15 and 40 percent.

Greater prairie chicken nesting habitat is described as tall to mid-grass communities with a mean height density index of 5.85 decimeters with 11 percent bare ground and an average height of sandsage at 84 centimeters; grasses 111 centimeters; and forbs 83 centimeters. (Nesting occurs within an average distance of 2.4 km of a lek.)

Lesser prairie chicken nesting habitat is described as short-mid grass and sandsage communities with a mean height density index of 3.5 decimeters with an average grass canopy coverage of 30 percent and 7 percent sandsage. The predominate plant associated with nesting cover is sandsage with an average height of 40-50 centimeters. (Nesting occurs within an average distance of 1.8 km [.2 to 4.8 km] of the lek site.)

Sharptail grouse nesting habitat is described as mountain shrub communities with a density of shrub plants from 1,700 to 32,000 shrubs per hectare and average shrub height of 30 centimeters. Nests are found primarily in shrub clumps where the shrubs are taller than average. (Nesting occurs within an average distance of 2 km of a lek.)

## EXHIBIT CO-34

### ENDANGERED SPECIES ACT SECTION 7 CONSULTATION STIPULATION

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

Preliminary



EXHIBIT CO-39

CONTROLLED SURFACE USE

This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O.13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

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Preliminary

EXHIBIT CO-40

LEASE NOTICE

The lessee is hereby notified the lease contains Sage Grouse habitat that has been designated as "high value" by the Colorado Division of Wildlife. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on the Sage Grouse populations and habitat quality. Such measures shall be developed during the Application for Permit to Drill on-site process and during the preparation of the required NEPA analysis and will be consistent with the lease rights granted.

Preliminary

EXHIBIT SJ-03

NO SURFACE OCCUPANCY STIPULATION

Dolores River Canyon, Menefee and Weber Mountains: Protection of recreational and visual values.

No specific exception criteria are currently identified.

Preliminary

EXHIBIT SJ-07

TIMING LIMITATION STIPULATION

Bald Eagle Winter Concentration Areas: December 1 to April 15.

No specific exception criteria are currently identified.

Preliminary

## LEASE NOTICE 101

Prior to surface disturbance on Slopes between 25-40%, an engineering/reclamation plan must be approved by the Authorized Officer. Such plans must demonstrate how the following will be accomplished:

- a. Site productivity will be restored.
- b. Surface runoff will be adequately controlled.
- c. Off-site areas will be protected from accelerated erosion such as drilling, gullying, piping, and mass wasting.
- d. Surface-disturbing activities will not be conducted during extended wet periods.
- e. Construction will not be allowed when soils are frozen.

No specific exception criteria are currently identified.

Preliminary