



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

Colorado River Valley Field Office

March 2012



**Programmatic Environmental Assessment  
Wildlife Habitat Mitigation Plan for Oil and Gas  
Exploration and Development  
DOI-BLM-CO-N040-2012-0034-EA**



**Prepared by  
Bureau of Land Management  
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**FONSI**  
**DOI-BLM-CO-040-2012-0034-EA**

The attached programmatic Environmental Assessment (EA) analyzing the environmental effects of the Proposed Action has been reviewed. Project design and approved mitigation measures result in a Finding of No Significant Impact (FONSI) on the natural and human environment in conjunction with use of mechanical and manual habitat treatments as mitigation for adverse impacts on big game winter range resulting from oil and gas exploration and development. Consequently, the BLM has determined that the Proposed Action does not require preparation of an Environmental Impact Assessment (EIS).

**DECISION RECORD**

DECISION: It is my decision to approve the Proposed Action described and analyzed in the programmatic EA of the Wildlife Habitat Mitigation Plan for oil and gas exploration and development activities affecting big game winter range.

RATIONALE: The bases for this decision are as follows:

1. Approval of the Proposed Action is in conformance with the current land use plan—the *Glenwood Springs Resource Management Plan* (RMP), approved in 1984 (revised in 1988) as amended by the *Oil & Gas Leasing & Development Record of Decision and Resource Management Plan Amendment*, approved in 1999—under which the CRVFO manages BLM lands within its administrative boundaries.
2. Approval of the Proposed Action is consistent with BLM's *Vegetation Treatments on BLM Lands in 17 Western States Programmatic Environmental Report* (PER), approved in 2007a.
3. Approval of the Proposed Action will facilitate the orderly, efficient, and environmentally sound treatment of seasonal important big game winter range habitat types that have been degraded by long-term alteration of the natural fire regime and other environmental factors and uses.
4. This decision does not authorize any surface-disturbing activities on public or private lands within the CRVFO. Individual treatment projects would be approved pursuant to EAs conducted for specific oil and gas projects or following preparation of a Documentation of Land Use Plan Conformance and NEPA Adequacy (DNA) for treatments not analyzed in EAs for specific oil and gas projects.

MITIGATION MEASURES: The considerations, restrictions, and mitigation measures presented in Appendix A of the attached programmatic EA would avoid, minimize, or offset potential short-term and long-term adverse impacts associated with the specified habitat types and treatment methods addressed by the proposed Wildlife Habitat Mitigation Plan. In addition, the treatments would provide long-term benefits for big game as well as other resources and resource uses, as described in the EA.

NAME OF PREPARER: Vanessa Bull, Natural Resource Specialist, Project Lead

SIGNATURE OF AUTHORIZED OFFICIAL:

  
\_\_\_\_\_  
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Supervisory Natural Resource Specialist

DATE: March 29, 2012

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# **ENVIRONMENTAL ASSESSMENT**

## **NEPA NUMBER**

DOI-BLM-CO-N040-2012-0034-EA

## **PROJECT NAME**

Programmatic Environmental Assessment of the Colorado River Valley Field Office Wildlife Habitat Mitigation Plan for Oil and Gas Exploration and Development

## **LOCATION**

Colorado River Valley Field Office, Oil and Gas High Potential Area, Parts of Garfield and Mesa Counties, Colorado (Figure 1).

## **PURPOSE AND NEED**

The purpose for this programmatic Environmental Assessment (EA) and Wildlife Habitat Mitigation Plan (WHMP), prepared pursuant to the National Environmental Policy Act (NEPA), is to streamline the process by which the Bureau of Land Management (BLM), Colorado River Valley Field (CRVFO), analyzes individual habitat treatment projects required as mitigation for impacts on big game winter range and use associated with oil and gas activities. Streamlining is needed because the current approach within the CRVFO—preparation of project-specific EAs to analyze and disclose the impacts of habitat treatments for individual oil and gas projects, treatment locations, and treatment methods not already covered in a master development plan (MDP)—can substantially delay planning and implementation of the treatments, potentially reducing their overall effectiveness.

Because habitat treatments necessarily involve some impacts to vegetation and often also to the soil surface, an evaluation of those impacts is required. Streamlining would be accomplished by using this programmatic EA as a comprehensive planning and analysis document to which individual treatment analyses can be tiered. This approach is in conformance with the National Environmental Policy Act (NEPA) through the process outlined in 40 CFR 1502.20. This provision encourages Federal agencies to tier new environmental documents to previously completed documents, when appropriate, for the purposes of eliminating repetitive discussions and focusing on critical project-specific natural and human environment elements present in the project vicinity and potentially affected by the project.

Under the Proposed Action, approval of individual habitat treatment projects would require preparation of a Documentation of Land Use Plan Conformance and Documentation of NEPA Adequacy (DNA), tiered to this programmatic EA, to identify specific project locations, methods, and timing. Additional on-the-ground surveys and clearances for special status wildlife and plants, raptors and other migratory birds, and cultural resources would be required for each treatment project prior to implementation. The relatively small range of ecological settings, habitat conditions, and treatment methods associated with the proposed WHMP lends itself well to the tiered DNA approach.

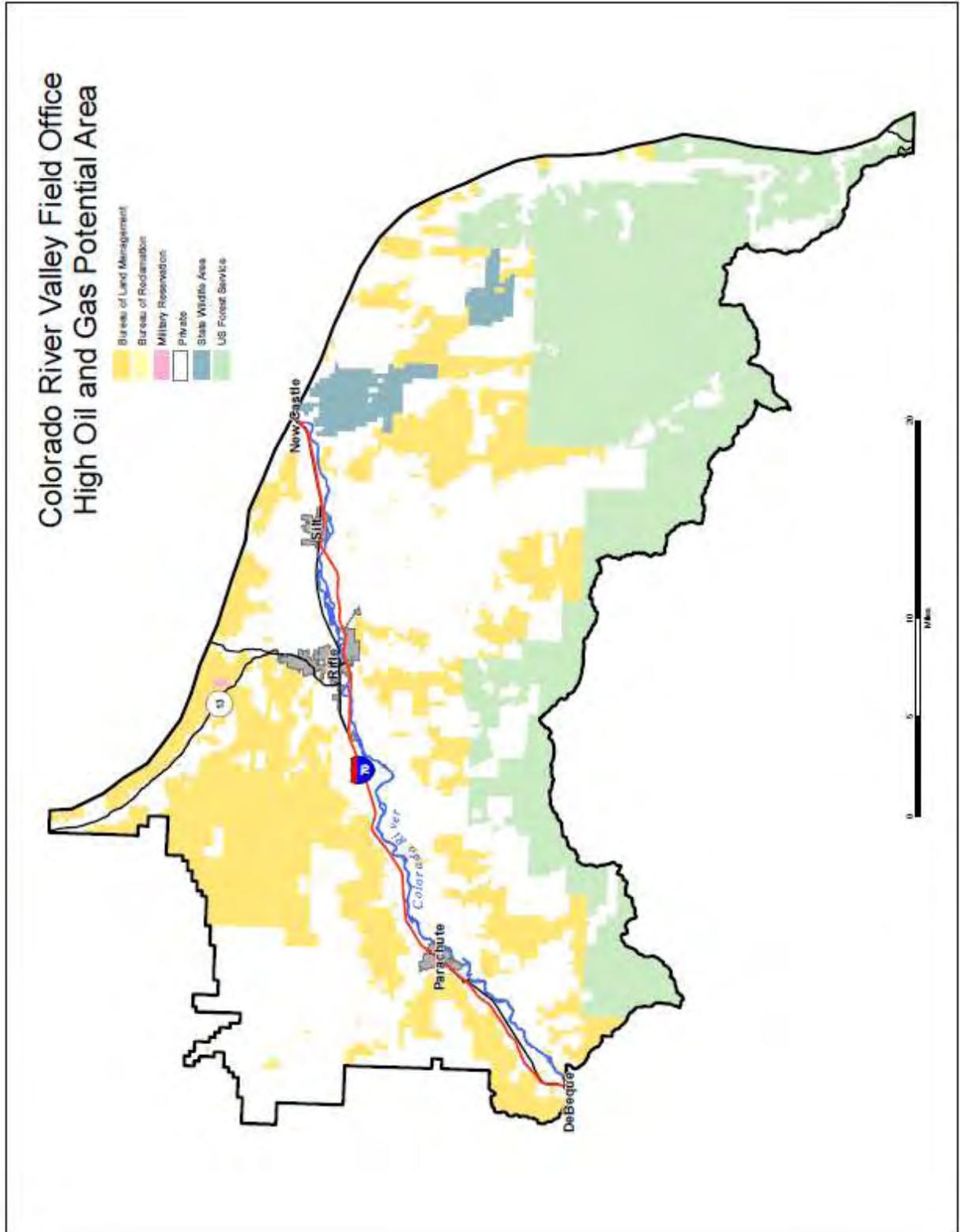


Figure 1. Project Area for the Programmatic Wildlife Habitat Mitigation Plan

## **ALTERNATIVES**

The area within which the Proposed Action would be applied lies within a portion of the CRVFO known as the “High Potential Area for Oil and Gas” and including BLM-administered Federal lands and split-estate lands (private surface with underlying BLM-administered Federal minerals). The project area includes lands along and adjacent to both sides of the Colorado River and I-70 corridor from southeast of New Castle, Garfield County, Colorado, to near DeBeque, Mesa County, Colorado (Figure 1).

The Proposed Action is to implement the WHMP analyzed in this programmatic EA as a basis for authorizing individual habitat treatments to mitigate the effects of oil and gas exploration and development on wildlife habitat amount, condition, and use. The intent of the Plan is to provide a comprehensive range of management actions and a decision-making framework that BLM resource managers can use to aid in selecting actions or combinations of actions to improve habitat for wintering big game and other wildlife species affected by oil and gas operations.

An increase in oil and gas development in recent years has led to concern regarding impacts to wildlife from increased human activity and surface disturbance in valuable wildlife habitats. Big game, particularly deer and elk, are subject to an increase in stress during winter months due to cold temperatures, difficulty of movement through snow, and limited availability and quality of forage. In combination with these natural stressors is the stress resulting from exposure to human activity, including noise, dust, and light pollution associated with construction, drilling, and completion activities for oil and gas. To alleviate potential impacts to big game winter range and use, and other types of habitats and seasonal uses, the WHMP presents measures for improving habitat and food sources outside the area of active disturbance but within the area of an overall wildlife population. While habitat treatments do not alleviate short-term impacts of direct or indirect habitat loss, modification, or fragmentation, they provide long-term benefits of greater cumulative value to the affected wildlife.

Under the WHMP, habitat treatments would be implemented using the best available technique(s) at the appropriate times based on site conditions, the desired outcome, and the range of treatment methods available. This EA analyzes mechanical and manual habitat treatments. Mitigation involving use of chemical herbicides to control weeds is not included in this programmatic EA but was addressed in the GSFO/CRVFO *Integrated Weed Management Plan and Programmatic Environmental Assessment*, DOI-BLM-CO-N040-2009-0078-EA (BLM 2009a).

### **Habitat Types to be Treated**

#### ***Sagebrush Steppe***

Sagebrush steppe—comprised of sagebrush mixed with secondary shrub species with an understory of grasses and forbs (broadleaf herbaceous plants)—is a key component of big game winter range. Healthy sagebrush stands consist of mixed age classes of shrubs with annual leaf and seed production as well as evidence of regeneration. Healthy sagebrush communities contain a diverse understory of native perennial herbaceous species. Impediments to long-term maintenance of healthy sagebrush communities include encroachment and competition by trees expanding from nearby pinyon-juniper stands and invasion by noxious weeds and other undesirable non-native plants.

Habitat treatments to be conducted under the WHMP include removal of encroaching pinyons and junipers and control of cheatgrass and/or other invasive non-native herbs. Depending on the quality of the herbaceous understory, these treatments may be followed by reseeding or interseeding with native perennial grasses and forbs selected on the basis of forage quality, reliability in habitat restoration

applications, and potential for long-term suppression of invasive species. Additional habitat treatments may include measures to reinvigorate mature or decadent stands to stimulate production of leaves and seeds. This type of treatment would include mowing of sagebrush plants to encourage new growth, possibly in conjunction with treatment of weeds and seeding of desirable herbaceous species.

### ***Pinyon-Juniper Woodland***

Mature pinyon-juniper woodlands provide not only forage, but high-quality thermal and escape cover for big game. As pinyon-juniper woodlands expand and age, they can reduce production of understory vegetation by depriving those species of direct sunlight and competing with them for nutrients and moisture. A primary source of annual moisture for winter range vegetation in the region is winter snowfall. As pinyon and juniper trees mature, their crowns begin to cover an increasingly high percentage of the soil surface, often approaching 100% canopy cover in late seral stages. The canopies intercept much of the snow, preventing it from reaching the ground and exposing it to sublimation from the winter sun and wind instead of allowing the moisture to gradually seep into the soil.

Treatments to reduce competition of pinyons and junipers with desirable herbaceous or shrub, which are a major source of forage for wild grazers, include thinning by selective removal of trees. This is often done in combination with weed treatments and reseeded of native grasses and forbs.

### ***Mixed Mountain Shrubland***

Mixed mountain shrublands provide transitional habitat between high-elevation summer range and low-elevation winter range for wild grazers. During mild winters, deer and elk may use mixed shrublands as well as lower elevation sagebrush shrublands for shelter and forage. Common shrubs in the mountain shrub complex in the project area include oakbrush and other tall or mid-height grasses in addition to sagebrush. As stands of mixed shrublands mature, the component species lose some of their value to wildlife. This loss results from reduced leaf and seed production, reduced quantity and quality of herbaceous vegetation as competition and shading by the shrubs increases, and (for tall shrub species) a gradual shift in foliage and shoot production to heights unreachable by smaller individuals of deer and elk. Overly dense stands of tall shrubs can also impede wildlife movement, reducing their value as thermal and escape cover.

Treatments to restore optimal production of shrub foliage and seeds and the growth of understory herbs and to facilitate use as thermal and escape cover by wild ungulates typically result in creation of a mosaic of shrub patches and grassy clearings, mimicking patterns following a natural disturbance.

## **Habitat Treatment Methods**

### ***Mechanical Treatment***

Mechanical treatment involves the use of vehicles such as wheeled tractors, tracked dozers, or specially designed vehicles with attached implements designed to cut, chop, or mulch existing vegetation. The selection of a mechanical method in a specific application is based on the characteristics of the vegetation, seedbed preparation and revegetation needs, topography and terrain, soil characteristics, climatic conditions, and an analysis of the cost compared to the expected productivity (BLM 1991a). Mechanical methods that may be used by the BLM include hydro-axing, drill seeding, mowing, roller chopping, and cutting. As new technologies or techniques are developed, these could be used if their impacts are similar to or less than those associated with the methods discussed below.

Hydro-axing is effective for removing coarse, woody vegetation. This equipment can mulch or lop and scatter plant debris, eliminating the need for post-treatment removal. This method is appropriate where a high level of control and precision is needed, such as in sensitive wildlife habitats or near home sites, and is often used instead of prescribed fire or herbicide treatments in the Wildland-Urban Interface (WUI).

Rangeland seed drills, which consist of a series of furrow openers, seed metering devices, seed hoppers, and seed covering devices, are either towed by or mounted on a tractor. The seed drill opens a furrow in the seedbed, deposits a measured amount of seed into the furrow, and closes the furrow to cover the seed.

Mowing tools, such as rotary mowers or straight-edged cutter bar mowers, can be used to cut herbaceous and small woody vegetation above the ground surface. Mowing is often done along highway rights-of-way (ROWs) to reduce fire hazards, improve visibility, prevent snow buildup, or improve the appearance of the area. Mowing is also used in sagebrush habitats to create a mosaic of uneven-aged stands and enhance wildlife habitat. As a method for controlling weeds, mowing is most effective on annual and biennial plants (Rees et al. 1996). Weeds are rarely killed by mowing, but mowing prior to seed production of annual and biennial species in consecutive years can reduce recruitment of new individuals and gradually deplete the seedbank contained in the soil. The use of a “wet blade,” in which an herbicide flows along the mower blade and is applied directly to the cut surface of the treated plant, has greatly improved the control of some species. Vegetation can be cut and chipped into mulch.

Roller-chopping tools are heavy-bladed drums that cut and crush vegetation up to 5 inches in diameter with a rolling action. The drums are pulled by crawler-type tractors, farm tractors, or a special type of self-propelled vehicle designed for forested areas or range improvement projects.

### ***Manual Treatment***

Manual treatment involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include cutting undesired plants above the ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit competitive growth (BLM 1991a).

Power tools such as chainsaws and power brush saws are particularly useful for thick-stemmed shrubs and small trees. Power tools can be used to remove and then lop and scatter the plant matter to aid in the decomposition process, to add mulch to the area, and to help buffer possible visual disturbances.

Hand tools used in manual treatments may include a handsaw, axe, shovel, rake, machete, grubbing hoe, mattock (combination of cutting edge and grubbing hoe), Pulaski (combination of axe and grubbing hoe), brush hook, and hand clippers. Manual treatments are most effective where the weed infestation is limited and soil types allow for complete removal of the plant material (Rees et al. 1996). Hand-pulling is also effective for annual and biennial plants prior to seed production, shallow-rooted perennial plants that do not resprout from residual roots, and plants growing in sandy or gravelly soils (the entire root is more easily removed in these coarse soils than in fine-textured, tight soils). Repeated treatments are often necessary due to soil disturbance and a residual weed seedbank.

Manual techniques can be used in many situations and usually with minimal environmental impacts. Although they are more challenging to implement over a large area, manual techniques can be highly selective. Consequently, manual methods are particularly beneficial in sensitive habitats such as riparian areas, steep or unstable slopes, areas containing sensitive plants, areas inaccessible to vehicles, and areas where use of chemical treatments would not be appropriate (BLM 1991a).

### ***Decision Process for Individual Projects***

For each project requiring wildlife mitigation and for which habitat treatments would be appropriate, the CRVFO, in collaboration with representatives of Colorado Parks and Wildlife (CPW)(formerly the Colorado Division of Wildlife, CDOW) and the proponent operator, would undertake the planning process described below, using the information summarized in Appendix A.

1. The CRVFO would determine the amount of mitigation required. This has typically consisted of requiring 25 acres of habitat treatment to offset direct and temporary indirect habitat loss of winter range. This amount represents an area approximately equal to a typical pad plus 200-meter buffer. For habitat treatments conducted in conjunction with the granting of an exception to a big game winter range Timing Limitation (typically 5 months if a lease stipulation and 60 days if a COA), the CRVFO, in collaboration with CPW, considers a wider range of mitigation options tailored to the specific situation. However, to the extent that habitat treatments are among the required mitigation measures, they have generally used a larger buffer due to greater sensitivity of big game to disturbance and habitat avoidance during the winter.
2. After the amount of required mitigation has been determined, the CRVFO would look for suitable areas within the general project area. If none is found in proximity to the affected area, the search would consider a larger area, with the goal of remaining as close as practicable to ensure that affected wildlife are benefited. Because of the high mobility and large home ranges—both daily and seasonally—of deer and elk, this provides considerable flexibility to CRVFO and CPW. Other considerations in prioritizing potential treatment sites are that (1) treatments on BLM surface lands are preferred over those on private lands because of the greater control of near-term and long-term use of the treated area, and (2) treatments associated with operations of one operator are typically avoided on lands overlying oil and gas leases held by another operator to avoid foreclosing future mitigation options for the other operator in conjunction with development of its leases.
3. Following selection of a treatment area, the CRVFO would identify the type of treatment most beneficial for the specific habitat area. The selection of habitat types and treatment methods would be drawn from the range listed in the previous subsections.
4. Information on the proposed treatment site and method would then be provided by the CRVFO wildlife biologist to other resource specialists, including the Energy Team’s botanist, archaeologist, hydrologist/environmental engineer (soil, water, air), and geologist/paleontologist. These specialists would evaluate the preliminary proposal, identify potential impacts, and specify site-specific resource surveys and monitoring to be required in conjunction with the treatment.

Once this planning process has been completed, the CRVFO would prepare a DNA to document conformance of the proposed treatment with this EA and the current land use plan (BLM 1999b). If the proposal use a method or potentially cause an impact not adequately disclosed and analyzed in this EA, an individual project-specific EA would be required. If herbicide use for weed control is needed in conjunction with one of the mechanical or manual methods analyzed in this EA, the chemical weed control would be conducted in conformance with the Integrated Weed Management Plan (BLM 2009a).

### **NEPA AND PLAN CONFORMANCE REVIEW**

The Proposed Action is consistent with the *Vegetation Treatments on BLM Lands in 17 Western States Programmatic Environmental Report* (PER) (BLM 2007a), which evaluates the general effects of non-herbicide treatments (i.e., biological, physical, cultural, and prescribed fire) on public lands. The

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

Name of Plan: The current land use plan is the *Glenwood Springs Resource Management Plan (RMP)*, approved in 1984 (BLM 1984, 1988). The most recent relevant amendment was the *Oil & Gas Leasing & Development Record of Decision and Resource Management Plan Amendment (BLM 1999b)*.

Decision Language: The 1999 ROD and RMP Amendment (BLM 1999b) include the following statements at page 15:

- “BLM will require reasonable mitigation of the impacts on wildlife habitat that are attributable to both past and proposed oil and gas development within the GAP area...when well densities...exceed four wells per 640 acres or when road densities exceed three miles of road per 640 acres.”

Discussion: The 1999 FSEIS (BLM 1999a) analyzed impacts to the natural and human environment, including wildlife, associated with oil and gas development and identifies appropriate best management practices (BMPs), standard operating procedures (SOPs), mitigation measures, and conservation measures for avoiding, minimizing, or offsetting adverse impacts. It also specified circumstances when wildlife mitigation measures would be required by the BLM, although wildlife mitigation may also be required whenever deemed necessary to ensure that proposed projects would not have significant adverse impacts on big game or other species.

Pursuant to the 1999 FSEIS, the BLM requires habitat treatments as mitigation for unavoidable adverse impacts to wildlife from oil and gas exploration and development. These impacts may include:

- direct habitat loss, modification, or fragmentation as a result of ground-disturbing activities
- indirect habitat loss as a result of human activities that preclude or reduce wildlife use of suitable habitat
- adverse effects on wildlife survival or reproduction due to physiological or behavioral stress

Direct habitat loss, modification, and fragmentation—and indirect impacts resulting from relative avoidance by some wildlife of areas of human activity—are widely recognized types of adverse effects on wildlife habitat and use resulting from oil and gas and other resource- or land-development projects. In addition to mitigation measures for avoiding or minimizing direct and indirect impacts, measures to preserve, enhance, or restore suitable habitat are also widely used. These measures are most effective when applied to areas used by the same species populations and the areas of unavoidable impacts, although benefits to the population may not prevent detriments to individual organisms. Therefore, implementation of habitat treatments such as included in the Proposed Action to improve habitat quantity and quality for big game ungulates within the area of use by affected species populations is consistent with the current land use plan, as amended (BLM 1999b).

## **PUBLIC SCOPING**

The CRVFO made the Proposed Action available for public review and comment for 30 days by posting on the BLM website, posting announcements in two local newspapers (the *Glenwood Springs Post Independent* and the *Rifle Citizen Telegram*), and notifying selected interested parties by a letter sent via regular mail. The CRVFO received a total of three comment letters. The comment letters, comment synopses, and BLM responses are provided in Appendix B.

## **NO ACTION ALTERNATIVE (CURRENT MANAGEMENT)**

Under the No Action Alternative, the CRVFO would continue its current approach to wildlife habitat mitigation. Under this approach, management direction for wildlife mitigation projects would be developed individually through separate environmental assessments or other appropriate analyses. The primary difference is that No Action Alternative would require substantially longer to design, approve, and implement individual treatments due to a piecemeal instead of comprehensive planning approach. Ultimately, however, the types and locations of treatments would be expected to be similar under both alternatives.

## **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

### **Land Health Assessments**

Surface-disturbing activities proposed in conjunction with BLM management actions or BLM-authorized activities on public lands are required to be analyzed in relation to BLM land health standards as described in the *Standards for Public Land Health and Guidelines for Livestock Grazing Management* (BLM 1997). All BLM field offices perform periodic Land Health Assessments (LHAs) to assess land health within their jurisdictional boundaries. These standards apply to upland soils, riparian systems, plant and animal communities, special status species, and water quality. Habitat treatments undertaken in relation to the WHMP for mitigation of oil and gas activities on big game winter range or other habitat types and wildlife uses would be conducted primarily in the areas of the Rifle West and Divide Creek LHAs (BLM 2005, 2009b).

### ***Divide Creek LHA***

*Standard 1 for Upland Soils* – All 58 upland sites were meeting standards, with some minor problems due to localized compaction, pedestaling, litter movement or removal, and cheatgrass infestations.

*Standard 2 for Riparian Systems* – All of the 18.6 miles of lotic (stream) habitats evaluated were meeting standards, described as Proper Functioning Condition (PFC), considerably from 5.6 miles in the previous LHA, when the remaining segments were Not Functioning or Functioning at Risk.

*Standard 3 for Plant Communities* – Twenty-two of the 58 upland sites were meeting standards for plant communities with some minor issues. The remaining 36 sites had moderate or greater issues associated with impacts of plant productivity from soil compaction, deficits in diversity and cover of native perennial species, low quality of decadent sagebrush stands, encroachment into sagebrush by pinyon-juniper, and invasion by non-native species, particularly cheatgrass. Overall, however, all but approximately 2,000 acres of the 47,000 acres assessed were achieving standards.

*Standard 3 for Terrestrial Wildlife Communities* – Except for poor vegetation aspects of habitat quality within the approximately 2,000 acres not achieving standards for plant communities, ecological processes were found to be functioning within a normal range of variability. Habitat condition was characterized as generally good and meeting Standard 3 for terrestrial wildlife.

*Standard 3 for Aquatic Communities* – Of the 17 streams with perennial segments evaluated in the LHA, a total of seven contain fish. The ten remaining streams are unsuitable for fish due to seasonally low flows (either naturally or due to water diversions), high sediment loads, or both. Given the limited potential of the perennial streams assessed, known constraints, and stream and riparian habitat condition, Standard 3 is being met for aquatic wildlife on BLM-managed streams within the LHA area.

Standard 4 for Special Status Species – Separate assessments of special status plant, terrestrial wildlife, and aquatic wildlife species all resulted in a determination that all areas are attaining land health standards for these organisms.

Standard 5 for Water Quality – Of the 19 segments on 17 streams evaluated, all were achieving standards, based on meeting Colorado water quality standards and other indicators. Turbidity of several stream reaches was high, but this is a natural condition due to the types of soils in the LHA area, adjacent steep slopes often with naturally sparse herbaceous plant cover, and the flashy nature of flows in response to major snowmelt and rainfall events.

### ***Rifle West LHA***

Standard 1 for Upland Soils – The Rifle West watershed was meeting Standard 1 for healthy soils on a site by site basis, with some areas of accelerated erosion noted mainly on Riley and Cottonwood Gulches.

Standard 2 for Riparian Systems – All but 1.5 mile of the 11.6 miles of stream segments assessed were at Proper Functioning Condition. The two exceptions were 0.6 mile in lower Cottonwood Gulch and 0.9 mile in lower Riley Gulch, in both cases due to road encroachment and/or poor culvert placement with associated erosion and sediment transport.

Standard 3 for Plant Communities – Of the 36 sites evaluated, 20 were meeting standards, 9 were meeting standards with some problems noted, and 7 were not meeting standards. Deficits included poor species and age-class diversity, low productivity, decadence of sagebrush stands and invasion by pinyon-juniper, and presence of weeds, particularly cheatgrass.

Standard 3 for Terrestrial Wildlife Communities – The majority of individual sites (18 of 25) north of the Colorado River were at least marginally meeting standards, as were all 11 of the sites south of the river. However, due to large-scale habitat fragmentation and human use, substantial portions of the Rifle West watershed were not meeting Standard 3 or are trending away from meeting Standard 3 for certain high-profile wildlife species, most notably mule deer.

Standard 3 for Aquatic Communities – Of the seven perennial streams assessed, all but Riley and Cottonwood Gulches—with problems of erosion and sediment transport—were achieving standards for aquatic organisms.

Standard 4 for Special Status Species – The assessment indicates that Standard 4 is currently being met for each special status species across the landscape and on a site-specific basis.

Standard 5 for Water Quality – While the limited data collected by BLM show that water quality standards established to protect the classified uses have been met in all 26 stream segments for which water quality was analyzed, visual observations indicate accelerated erosion creating elevated sediment loading within much of the assessment area. The State of Colorado list of impaired waters includes most tributaries to the Colorado River between the Roaring Fork and Parachute Creek as impaired due to selenium. In addition, the Colorado River between the Roaring Fork and Parachute Creek is on the State's monitoring and evaluation list for sediment. In reality, both the selenium values in tributaries and sediment loads in the mainstem Colorado River are natural high and not indicative of anthropogenic (human-caused) influences.

Based on the most recent LHAs for the Rifle West and Divide Creek areas (BLM 2005, 2009b) and the types of habitat treatment purposes, methods, and constraints/mitigation included in the WHMP and analyzed in this programmatic EA, it is expected that the treatments would not prevent any portions of the

two LHA areas from meeting Colorado land health standards. Moreover, removing pinyon-juniper trees encroaching into sagebrush, reinvigorating decadent sagebrush stands, and incorporating measures to control weeds and establish native perennial grasses would help improve conditions in many of the upland plant and animal communities that are meeting standards but showed some deficits. This is also true of associated use of herbicides to control or eradicate weed infestations in conjunction with some habitat treatments, pursuant to CRVFO's Integrated Weed Management Plan (BLM 2009a).

### **Elements of the Natural and Human Environment**

BLM is also required to address impacts to elements of the environment that are potentially present and potentially affected by a BLM-initiated or BLM-approved project. During its internal scoping process for this programmatic EA, as required by NEPA, BLM resource specialists identified the following elements of the natural and human environment as being present in the project vicinity and potentially affected by the Proposed Action.

Air Quality	Soils
Cultural Resources	Special Status Species
Fire/Fuels Management	Vegetation
Invasive Non-Native Plants	Visual Resources
Livestock Grazing and Management	Water Quality, Surface
Native American Religious Concerns	Wetlands and Riparian Areas
Noise	Wildlife, Aquatic and Terrestrial

The following subsections describe the potential impacts of the Proposed Action and No Action Alternative on these resources and resource uses. Factors considered in decided where, when, and how to implement the proposed habitat treatments, and associated mitigation measures to avoid or minimize adverse impacts to other resources and uses, are presented in Appendix A and incorporated into the mitigation analyses below.

### **Air Quality**

#### **Affected Environment**

Colorado Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) are health-based criteria for the maximum acceptable concentrations of air pollutants in areas of public use. The project area lies within Garfield County, which has been described as an attainment area under CAAQS and NAAQS. An attainment area is an area where ambient air pollution quantities are below (i.e., better than) NAAQS standards. Regional background values are well below established standards, and all parts of the cumulative study area are designated as attainment for all criteria pollutants.

#### **Environmental Consequences**

##### *Proposed Action*

The Proposed Action includes use of motorized equipment to manipulate vegetation. Air quality impacts due to exhaust emissions from vehicles and equipment and fugitive dust emissions from ground disturbance would be localized and short-lived. No significant adverse impacts to air quality are anticipated.

### *No Action Alternative (Current Management)*

Under the No Action Alternative, air quality impacts resulting from habitat treatments associated with oil and gas would be similar to or the same as those under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

## **Cultural Resources**

### **Affected Environment**

Section 106 of the National Historic Preservation Act (P.L. 89-665; 80 Stat. 915; 16 U.S.C. 470) and its implementing regulations found at 36 CFR Part 800 requires Federal agencies to take into account the effects their actions will have on cultural resources for any endeavor that involves Federal monies, Federal permitting or certification, or Federal lands. The Colorado River Valley Field Office area is located within a larger area identified by the Ute Tribes as part of their ancestral homeland. Contemporary Native American groups such as the Ute Tribes of the Uinta and Ouray Bands (Northern Ute), Southern Ute, and Ute Mountain Ute Tribes maintain cultural ties to the land and resources within the CRVFO area. Cultural resources are locations of past or current human activity, occupation, or use and include prehistoric or historic archaeological sites, buildings, structures, objects, districts, or other places. Cultural resources can also be natural features including native plants localities that are considered to be important to a culture, subculture, or community. Traditional Cultural Properties (TCPs) located throughout the CRVFO area, are places associated with the traditional lifeways, cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity. Locations of TCPs, are often not known to the BLM, but may still be present in the project area.

Vegetation treatments have the potential to impact cultural resources and some native plant species utilized by the Ute tribes. Specific vegetation treatment proposals would follow standard procedures for identifying cultural resources, in compliance with Section 106 of the National Historic Preservation Act (NHPA) as implemented through the Colorado State protocol. The process includes necessary consultations with the Colorado State Historic Preservation Office (SHPO), and interested tribes. Consultation regarding specific vegetation treatment projects would be initiated with the Uinta and Ouray Bands (Northern Ute), Southern Ute, and Ute Mountain Ute Tribes prior to treatment.

The Colorado BLM cultural resource inventory standards for vegetation treatments are as follows:

- A. A literature and records search will be conducted for the area of potential effect or APE. The results will be reviewed to determine if above-ground structures or ruins are present or are highly likely to be present. Based on the results, one of the following options occurs:
  1. If no above-ground structures or ruins are present or likely to be present, no field inventory is required. The undertaking will have no effect on cultural resources. The project may proceed after the cultural resource report is completed. An informational copy of the report will be provided to SHPO.
  2. If above-ground structures or ruins are present or likely to be present, a Class II inventory is required. A Class III inventory will be conducted in areas of high sensitivity.

- a. No eligible cultural resources are identified in the APE. The project may proceed after the cultural report is completed. An informational copy of the report is provided to SHPO.
- b. Potentially eligible (need data) and eligible sites are identified in the APE. All eligible sites are avoided. The project may proceed after the cultural report is completed. An informational copy of the report is provided to SHPO.
- c. Potentially eligible (need data) and eligible sites are identified in the APE. Adverse effects to sites are identified and appropriate mitigation measures are developed. The cultural report is submitted to SHPO for concurrence. After consultation is completed, BLM will implement the site treatment plan(s). The project may proceed upon completion of the site treatment plans (Haas 2006).

### Environmental Consequences

#### *Proposed Action*

Mechanical and manual methods of habitat treatment have the potential to negatively affect cultural resources through the introduction of wheeled or tracked vehicles onto sites or culturally sensitive areas. In addition, mowing or chopping operations have the potential to damage ephemeral cultural structures. For archaeological sites, direct impacts could result primarily from disturbance of surface and subsurface sediments. For historic properties with protohistoric or historic structural remains, direct impacts may result from damage to or destruction of these structures. Direct impacts to cultural resources can occur whenever the ground surface is disturbed. The Proposed Action has been designed to reduce or eliminate direct impacts through avoidance of known resources. Specific vegetation treatment proposals would follow standard procedures for identifying cultural resources, in compliance with Section 106 of the National Historic Preservation Act (NHPA), as implemented through the Colorado State protocol.

In addition to direct impacts, proximity of vegetation treatment projects to a cultural resource may diminish the quality of the cultural resource by changing its setting, location, association, and feeling, particularly for culturally sensitive Native American sites and/or areas of concern. Mitigation measures to avoid significant adverse impacts to cultural resources under the Proposed Action would include the following:

- All mechanical treatments (brush mowing, brush beating, hydro-axing, etc.) shall occur no closer to the ground surface than 6 inches.
- Wheeled or tracked equipment shall be operated only on dry or frozen soil to minimize surface disturbance.
- Thinning of pinyon-juniper habitats shall include only trees less than 6 inches in diameter at breast height (dbh).
- Thinning of pinyon-juniper habitats shall occur only in areas that have had a cultural resource inventory conducted and a reported submitted to and accepted by the BLM.

The following conditions would be attached to each habitat treatment authorized pursuant to the WHMP:

- All persons in the area who are associated with this project shall be informed that any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item, or archaeological resources on public lands is subject to arrest and penalty of law (16 USC

433, 16 USC 470, 18 USC 641, 18 USC 1170, and 18 USC 1361). Strict adherence to the confidentiality of information concerning the nature and location of archeological resources would be required of the proponent and all of their subcontractors (Archaeological Resource Protection Act, 16 U.S.C. 470hh).

- Inadvertent Discovery: The National Historic Preservation Act (NHPA) [16 USC 470s., 36 CFR 800.13], as amended, requires that if newly discovered historic or archaeological materials or other cultural resources are identified during the Proposed Action implementation, work in that area must stop and the BLM Authorized Officer (AO) must be notified immediately. Within five working days the AO will determine the actions that will likely have to be completed before the site can be used (assuming in place preservation is not necessary).
- The Native American Graves Protection and Repatriation Act (NAGPRA) [25 USC 3001 et seq., 43 CFR 10.4] requires that if inadvertent discovery of Native American Human Remains or Objects of Cultural Patrimony occurs, any activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice be made to the BLM Authorized Officer, as well as the appropriate Native American group(s) (IV.C.2). Notice may be followed by a 30-day delay (NAGPRA Section 3(d)).
- Additional areas or changes in the methodology to achieve the proposed effect may require additional archaeological inspection by a qualified archaeologist. These changes include but are not limited to roller chopper, aerator treatment, or other ground disturbing equipment.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts on cultural resources would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities. Individual vegetation treatment proposals would continue to follow standard procedures for identifying cultural resources, in compliance with Section 106 of the National Historic Preservation Act (NHPA), as implemented through the Colorado State protocol.

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

#### Affected Environment

Sagebrush steppe, pinyon-juniper woodland, and mixed mountain shrub habitats in the CRVFO area include infestations of 15 species listed by the State of Colorado as List B noxious weeds, seven species listed as List C noxious weeds, and numerous other invasive non-native grasses and forbs.

List B noxious weeds in these habitats include Scotch thistle (*Onopordum acanthium*), bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), plumeless thistle (*Carduus acanthoides*), houndstongue (*Cynoglossum officinale*), Russian knapweed (*Acroptilon repens*), spotted knapweed (*Centaurea stoebe* ssp. *micranthos*), diffuse knapweed (*Centaurea diffusa*), yellow toadflax (*Linaria vulgaris*), hoary cress (*Cardaria draba*), perennial pepperweed (*Lepidium latifolium*), black henbane (*Hyoscyamus niger*). Two invasive non-native shrubs--tamarisk or salt-cedar (*Tamarix* sp.) and Russian-olive (*Elaeagnus angustifolia*)—are also List B noxious weeds and especially pernicious in riparian habitats.

List C noxious weeds in these habitats include cheatgrass (*Anisantha tectorum*), field bindweed (*Convolvulus arvensis*), common burdock (*Arctium minus*), common mullein (*Verbascum thapsus*),

halogeton (*Halogeton glomeratus*), wild chicory (*Chicorium intybus*), and cranesbill (*Erodium cicutarium*). Cheatgrass in particular is widespread and dominates the vegetation on many sites.

Common invasive non-natives include bulbous bluegrass (*Poa bulbosa*), kochia (*Bassia scoparia*), Russian-thistle (*Salsola* spp.), lambsquarters (*Chenopodium album*), prostrate knotweed (*Polygonum aviculare*), prostate pigweed (*Amarantha blitoides*), prickly lettuce (*Lactuca serriola*), tall tumble-mustard (*Sisymbrium altissimum*), desert alyssum (*Alyssum desertorum*), purple mustard (*Chorispora tenealla*), bur buttercup (*Ceratocephala orthocera*), and horehound (*Marrubium vulgare*). Of these, kochia, Russian-thistle, and bulbous bluegrass are most likely to be the target of weed-control measures conducted in conjunction with habitat treatments.

Various non-native perennial pasture grasses may also behave as invasive species in areas of adequate moisture, primarily when a seedbank from prior seeding is likely to impede or prevent germination and establishment of desirable native perennial species. These species, including smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), intermediate wheatgrass (*Thinopyrum intermedium*), and orchardgrass (*Dactylis glomerata*), are typically not the primary target of weed control in conjunction with habitat treatments but may be killed or suppressed by control of more aggressive species in the stand.

Disturbed sites are particularly vulnerable to noxious weed and non-native invasive plant establishment and spread. Historic and ongoing disturbances within the project area include agriculture, livestock grazing, oil and gas development, OHV use, and fire. Locations with highest concentrations of invasive plants include wildfire sites, roadsides, and livestock concentration areas. Noxious weeds may affect the environment by altering soil properties, depleting soil nutrients and soil moisture, altering the composition of native plant communities, and altering historic fire return intervals. On a watershed level, heavy infestations of weeds can alter seasonal water flows, reduce infiltration, and increase runoff.

### Environmental Consequences

#### *Proposed Action*

Under the Proposed Action, vegetation treatments would include removing juniper and pinyon trees, mowing or roller-chopping sagebrush, and opening up overly dense stands of oakbrush or other mixed mountain shrubs. These actions would expose the ground surface to increased sunlight and create patches of disturbed ground. If noxious weed seeds are present or introduced during treatment operations, this would create an ideal habitat for introduction and spread of noxious weeds. Due to the widespread presence of cheatgrass within the target habitat types, this species is of particular concern. The cheatgrass risk tends to be lower on treatment sites where initial canopy cover is lower and the densities of native bunchgrasses are higher. Conversely, on sites with denser canopy cover and lower densities of native bunchgrasses, the risk of cheatgrass expansion following vegetation removal treatments is greater.

To reduce the risk of noxious weed introductions, all vehicles and mechanical equipment would be pressure-washed prior to entering the treatment areas. On sites where noxious weeds are present, infestations would be treated to the extent possible prior to woody vegetation removal. Uninfested areas would be treated first, and infested areas treated last, to reduce the risk of spreading weeds within project areas. On sites with pre-existing high cheatgrass densities, herbicide treatment of cheatgrass followed by seeding with native species would reduce the risk of cheatgrass expansion in response to treatments of woody vegetation.

### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on invasive non-native plants would be the same as the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities. Individual weed treatments not associated with other habitat treatments would continue to occur within oil and gas development areas as a requirement of disturbed site reclamation and maintenance.

Chemical control of weeds, while not specifically included in this EA, would accompany some habitat treatments, to the benefit of livestock. Weed treatments using herbicides were addressed in the CRVFO programmatic weed treatment EA (DOI-BLM-CO-N040-2009-0078-EA), incorporated here by reference.

## **Livestock Grazing and Management**

### Affected Environment

With the exception of some small, isolated parcels, BLM-administered public lands in the High Potential Area of the CRVFO are managed for grazing of livestock under a permit system. Each grazing allotment is managed by the BLM in terms of the type, timing, duration, and intensity of livestock use and monitored to ensure that the land continues to function at appropriate levels for other uses, including use by wildlife. Some allotments, referred to as common allotments, are used by multiple permittees (e.g., used for sheep and cattle at different times or in different pastures).

Habitat treatments and other range improvements are conducted by the BLM as needed to improve the quantity and quality of forage. Monitoring data are used by the BLM to adjust the grazing regime on individual allotments, up to and including temporary suspension or permanent withdrawal from grazing in cases of resource damage, conflict with other uses, or lack of access. In general, construction and operation of oil and gas facilities is not a conflict that leads to significant changes in grazing use of an area, although some accommodations such as providing alternative watering sources and installing fences with gates and cattle guards may be necessary.

The direct loss of forage due to oil and gas activities is relatively minor overall, since not all associated facilities are located in areas of regular livestock use (e.g., well pads may be located on slopes or in wooded habitats not frequented by livestock). However, full development of an area of sagebrush or other low-growing shrubs with grasses and forbs might include as much as 10% long-term habitat loss for well pads and associated access roads and pipelines—i.e., 64 acres of habitat loss per 640 acres of suitable rangeland. This amount of direct loss is substantially lower under current drilling technologies, which allow many more wells to be drilled from a single well pad, thereby reducing the amount of vegetation loss on a per-well basis. Indirect habitat loss such as affects sensitive wildlife species that tend to avoid areas of human activity is less of an issue with domestic grazers.

### Environmental Consequences

#### *Proposed Action*

Under the Proposed Action, as at present, habitat treatments would continue to be used as mitigation for unavoidable impacts of oil and gas activities on wildlife habitat, particularly big game winter range. Because domestic grazers compete to some extent for forage with wild ungulates—particularly elk and to

a lesser extent deer—manipulation of existing vegetation to benefit wildlife would have some temporary adverse impacts but greater long-term benefits for livestock.

Over the short term, operation of equipment for mechanical treatments such as removal of pinyon and juniper trees, mowing or roller chopping of decadent or overly dense sagebrush, and seeding or interseeding with desirable perennial grasses and forbs may reduce the quantity and quality of forage for domestic grazers. In some cases, treated areas may be closed to livestock use during part or all of the growing season, or multiple growing seasons, to allow manipulated plants an opportunity to recover from the loss of above-ground tissue and to allow seeded plants an opportunity to become better established before being grazed or trampled by livestock.

Over the long term, habitat treatments to benefit wildlife would also benefit livestock by improving the quantity and quality of forage, including new foliar growth on twigs and shoots of treated shrubs, lower foliar height of previously tall shrubs cut to near the ground surface, and increased herbaceous production as a result of reduced competition by the shrubs or seeding/interseeding with desirable native species..

Chemical control of weeds, while not included in this EA, would also accompany some habitat treatments, to the benefit of livestock. Weed treatments using herbicides were addressed in the CRVFO programmatic weed treatment EA (DOI-BLM-CO-N040-2009-0078-EA), incorporated by reference.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts on livestock grazing and rangeland management would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities. In addition, habitat treatments aimed specifically at improving forage quantity and quality for livestock or providing other types of rangeland benefits would continue to be applied outside the oil and gas program.

### **Native American Religious Concerns**

#### Affected Environment

The Ute Indian Tribes identify this region as part of their ancestral homeland. There are known areas of Native American religious concern within the CRVFO and others that may have not been identified to the BLM. As previously mentioned in the Cultural Resources section, consultation regarding projects within the proposed WHMP area would be initiated with the Uinta and Ouray Bands (Northern Ute), Southern Ute, and Ute Mountain Ute Tribes when specific treatment projects are identified and proposed.

#### Environmental Consequences

##### *Proposed Action*

Any vegetation treatment has some potential to affect cultural resources in the CRVFO area. For archaeological sites, direct impacts result primarily from disturbance of surface and subsurface sediments. For historic properties with protohistoric or historic structural remains, direct impacts may result from damage to or destruction of these structures. Direct impacts to cultural resources can occur whenever the ground surface is disturbed. The Proposed Action has been designed to reduce or eliminate direct impacts to known Native American religious concerns by avoidance. Specific vegetation treatment proposals would follow standard procedures for identifying cultural resources, in compliance with Section 106 of

the National Historic Preservation Act (NHPA), as implemented through the Colorado State protocol. In addition to direct impacts, proximity of a proposed vegetation treatment project to a cultural resource may adversely impact the religious significance of a cultural resource by changing its setting, location, association, and feeling, for culturally sensitive Native American sites and/or areas of religious concern.

*No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on Native American religious concerns would be the same as under the Proposed Action. Current management of areas of Native American religious concern would remain, with vegetation treatments planned and analyzed on an individual project basis. Specific vegetation treatment proposals would follow standard procedures for identifying cultural resources, in compliance with Section 106 of the National Historic Preservation Act (NHPA), as implemented through the Colorado State protocol.

**Noise**

Affected Environment

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

Sound levels have been calculated for areas that exhibit typical land uses and population densities. In rural recreational and agricultural lands, ambient sound levels are expected to be approximately 30 to 40 dBA (EPA 1974, Harris 1991). These typical noise levels result primarily from equipment operations during ranching and farming activities and vehicular traffic on rural roads. In comparison, the noise level during normal conversation of two people 5 feet apart is approximately 60 dBA.

Environmental Consequences

*Proposed Action*

The types of habitat treatments described and analyzed in this EA would result in short- term increases in noise levels during use of motorized equipment, including a variety of tractors, dozers, and similar equipment. Representative noise levels for the types of heavy equipment used for removing trees, mowing or roller-chopping sagebrush, and seeding/interseeding desirable species are shown in Table 1.

<b>Table 1. Noise Levels at Typical Construction Sites and along Access Roads</b>			
<i>Equipment</i>	<i>Noise Level (dBA)</i>		
	<i>50 feet</i>	<i>500 feet</i>	<i>1,000 feet</i>
Backhoe	85	65	59
Bulldozer	89	69	63
Front Loader	83	83	57
Heavy Truck	88	68	62
Tractor	80	60	54
Sources: BLM (1999a), La Plata County (2002)			

Comparing the noise levels shown in the table with the typical rural noise levels of 30 to 40 dBA (EPA 1974, Harris 1991) indicates that treatment-related heavy equipment operations substantially above typical background levels, even at a distance greater than 1,000 feet. However, the elevated noise levels associated with habitat treatments would be of short duration—on the order of one or a few days—and generally would not occur in proximity to an occupied residence. Noise levels associated with typical construction-related heavy equipment, in the range of 54 to 63 dBA at a distance of 1,000 feet, as shown in Table 1, would comply with the daytime noise standard of 55 dBA and the nighttime standard of 50 dBA, as measured at a distance of 350 feet, for oil and gas activities in residential/agricultural/rural areas of Colorado (COGCC 2006).

Based on the above, implementation of habitat treatments using the methods addressed in this EA would have temporary, localized, and minor or negligible impacts on nearby residents or recreational users.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, noise impacts related to habitat treatments would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

### **Recreation**

#### Affected Environment

BLM lands within the CRVFO area offer a variety of outdoor recreation opportunities, including land-based, water-based, and snow sports activities. Typical recreational activities on BLM lands within the area where oil and gas activities and associated habitat treatments have and would continue to occur consist primarily of hunting, horseback riding, and OHV travel, with limited use for camping, mountain biking, and cross-country skiing/snowshoeing. Fishing and boating uses occur along the Colorado River.

The project region is a world-renowned destination for outdoor recreation enthusiasts. Recreation visitors to the area come from three primary sources: nearby communities, Denver and the remainder of the Colorado Front Range, and national and international locations, in decreasing order of visitor-days. The high volume of visitor recreation use is related in part to easy access via I-70 and, for travelers from more distant locations, via Amtrak and major air carriers to regional airports. Because the region is desirable as a location to live and work year-round, recreation on public lands has increased in response to increased permanent population growth of Garfield County irrespective of the increase in recreational tourism.

For both residents and visitors, big game hunting—especially for deer and elk—is of special importance to local economies and in terms of motorized travel into remote areas. While OHV use is important year-round, including ATVs and snowmobiles, motorized travel related to hunting from late summer through fall creates a seasonal spike in visitor use in areas of oil and gas development and nearby big game winter range where human visitation would otherwise be minor and infrequent.

#### Environmental Consequences

##### *Proposed Action*

Under the Proposed Action, habitat treatments would be conducted in areas of big game winter range, including areas not directly or indirectly affected by oil and gas activities but used only as mitigation

areas. During habitat treatments, and following treatments for which a period of rest is required to minimize impact to sensitive vegetation while it recovers from the disturbance, treatment areas may be unavailable for recreational use. However, periods of active treatment are expected to be of short duration in a given area (one to a few days), the total amount of treated acres in any given year would be relatively minor (no more than a few hundred acres total, and typically less than 100 acres in a given area). Potential restrictions on cross-county travel could have more protracted impacts on use, but such restrictions are expected to be minimal in areas of substantial recreational use.

Large-scale treatment projects conducted during the late summer and fall hunting seasons could interfere with hunting and the operations of big game hunting guides targeting deer, elk, and mountain lions in the WHMP vicinity. Prior to treatments, the BLM would consult with guide permittees operating in proximity to the treatment areas to ensure that treatments are scheduled and conducted in a manner to not interfere with their operations.

Based on the considerations described above, no significant impacts on recreational use are anticipated.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on recreation would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

## **Soils**

### Affected Environment

The Proposed Action would occur almost entirely within the area covered by the *Soil Survey of Rifle Area, Colorado* (USDA 1985, NRCS 2010). Soils in this area consist primarily of the following major associations:

- Arvada-Torrifluents-Heidt: Deep, well-drained to somewhat poorly drained, nearly level to gently sloping soils on benches, terraces, alluvial fans, and floodplains. Found along the Colorado River and the lower reaches of tributaries. Used for irrigated crops, grazing, and wildlife habitat.
- Torriorthents-Rock Outcrop-Camborthids: Dominantly shallow to deep, well-drained, steep to extremely steep soils and rock outcrops on mountains, fans, and ridges. Found primarily on barren or sparsely vegetated slopes north of I-70 and west of Rifle, with minor areas south of Silt and New Castle. Used for grazing and wildlife habitat.
- Potts-Ildefonso-Vale: Deep, well-drained gently sloping to steep soils on mesas, alluvial fans, terraces, and benches. Found along much of the lower sideslopes of the Colorado River valley, south of the river from west of the Grand Hogback to DeBeque and north of the river from west of the Grand Hogback to Rifle. Used for irrigated and dryland crops, grazing, and wildlife habitat.
- Morval-Villa Grove: Deep, well-drained, moderately sloping to moderately steep soils on mesas, mountainsides, and alluvial fans. Found on valley sideslopes above the Potts-Ildefonso-Vale soils, south of the river from west of the Grand Hogback to DeBeque. Used for grazing and wildlife habitat.

- Bucklon-Inchau-Cochetopa: Shallow to deep, well-drained, moderately sloping to steep soils on mountains and alluvial fans. Found on slopes above the Morval-Villa Grove soils south of the river and west of Divide Creek. Used for grazing and wildlife habitat.
- Jerry-Lamphier-Cochetopa: Deep, well-drained, moderately sloping to steep soils on mountains and fans. Found on slopes above the Morval-Villa Grove soils south of the river and east of Divide Creek. Used for grazing and wildlife habitat with a minor amount in irrigated cropland.

All soils except those along the Colorado River valley floor (Arvada-Torrifluvents-Heidt) include some very steep as well as gently to moderately sloping areas. Treatments on steep slopes would be limited to manual methods. Most are loams or silt loams, with a range from clay loam to stony loam and some areas of alluvium and rock outcrops. None of the soils is considered highly erodible, although Potts and Vale soils having a higher erosion potential than the other types.

### Environmental Consequences

The habitat treatment options in the Proposed Action would result in short-term surface disturbance and soil impacts. Mechanized equipment would be used on in areas with gentle to moderate slopes and stable soils. A minimum 100-foot-wide buffer would be retained between the treatments and any streams, ponds, or wetlands to minimize soil loss and transport to surface waters. Choice of vehicle type—rubber-tired or tracked—would be made for each treatment in order to minimize erosion. The amount of soil damage associated with these two types depends on soil type, moisture content, and plant cover.

Manual vegetation manipulation such as hand-cutting of woody plants and hand-seeding with desirable native species would be used in sensitive areas such as on steeper slopes, erosive soils, and in proximity to wetland or riparian areas.

### No Action Alternative (Current Management)

Under the No Action Alternative, soil impacts related to habitat treatments would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

### Special Status Species

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

#### Affected Environment

According to the latest list from the USFWS, four Federally listed plant species may be impacted by actions occurring in Garfield County: Colorado hookless cactus (*Sclerocactus glaucus*), DeBeque phacelia (*Phacelia submutica*), Parachute beardtongue (*Penstemon debilis*), and Ute ladies'-tresses orchid (*Spiranthes diluvialis*). No proposed or candidate plant species are known to occur or believed to have the potential to occur in Garfield County. Summary information on the four listed species is provided below.

Colorado Hookless Cactus (*Sclerocactus glaucus*). The Colorado hookless cactus occurs in western Colorado on gravelly alluvial terraces, rocky hills and mesa slopes at elevations ranging from 3,900 to 6,000 feet. In the CRVFO planning area, the cactus is found between DeBeque and Parachute in salt desert shrub habitats dominated by shadscale (*Atriplex confertifolia*), big sagebrush (*Artemisia*

*tridentata*), greasewood (*Sarcobatus vermiculatus*) and galleta grass (*Pleuraphis jamesii*). Some sites have dense cheatgrass, which competes with the cactus and may interfere with seedling establishment.

DeBeque Phacelia (*Phacelia submutica*). The DeBeque phacelia is an annual plant endemic to Garfield and Mesa Counties in Colorado. The plant grows on sparsely vegetated, steep slopes of chocolate-brown or gray clays in the Wasatch Formation at elevations between 4,700 and 6,200 feet. Soils generally contain cracks due to expansion and contraction. At this time, there are only two documented populations of DeBeque phacelia in the CRVFO planning area, and both are north of the Garfield County landfill. Additional potential habitat occurs in the foothills south and east of DeBeque.

Parachute Penstemon (*Penstemon debilis*). Parachute penstemon is known to occur in only five locations and all are within the CRVFO. This penstemon is limited to sparsely vegetated, steep, shale talus slopes of the Parachute Creek member of the Green River Formation at elevations ranging from 8,000 to 9,000 feet.

Ute Ladies'-tresses Orchid (*Spiranthes diluvialis*). Ute ladies'-tresses occurs in Colorado, Utah, Wyoming, Nebraska, Nevada, Idaho, Montana, and Washington. The Colorado occurrences are generally in meadows within floodplains or adjacent to perennial streams, in wet meadows near irrigation ditches, or other types of wetlands. Colorado occurrence elevations range between 4,500 and 6,240 feet.

### Environmental Consequences

#### *Proposed Action*

Under the Proposed Action, no treatments are proposed within the habitats of DeBeque phacelia, Parachute beardtongue, Ute ladies'-tresses, or Colorado hookless cactus. Because no vegetation treatments would occur in these habitats, the Proposed Action would have **No Effect** on these species.

Potential habitat for Colorado hookless cactus may occur in areas proposed for vegetation treatments. All potential habitats would be surveyed for Colorado hookless cactus, and no vegetation treatments would occur within 700 meters of any occurrence. Therefore, the Proposed Action would have **No Effect** on the Colorado hookless cactus. It is possible that this species could benefit from cheatgrass removal treatments in some instances. If it is determined that vegetation treatments would be beneficial to Colorado hookless cactus, supplementary NEPA analysis and appropriate consultation with USFWS would be completed prior to project implementation.

#### *No Action Alternative (Current Management)*

Under this alternative, impacts of habitat treatments on Federally listed, proposed, or candidate threatened or endangered plants would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

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

#### Affected Environment

The following eight species of Federally listed, proposed, or candidate threatened or endangered vertebrate species are known to occur within or may be affected by projects within Garfield County:

Canada Lynx (*Lynx canadensis*). Federally listed as threatened. Canada lynx occupy high-latitude or high-elevation coniferous forests characterized by cold, snowy winters and an adequate prey base (Ruggiero et al. 1999). The USFS has mapped suitable denning, winter, and other habitat for lynx within the White River National Forest (WRNF), portions of which are adjacent to BLM lands within the CRVFO. Mapped suitable habitat in the WRNF comprises several areas known as Lynx Analysis Units (LAUs) that border BLM lands along the I-70 corridor from east of Wolcott to west of DeBeque. While BLM lands within the CRVFO area are generally not suitable habitat, they may support movement by animals dispersing to a new area or moving to lower elevations in search of prey.

Mexican Spotted Owl (*Strix occidentalis*). Federally listed as threatened. In Colorado, the Mexican spotted owl occurs in lower elevation forests, mostly in deeply incised, rocky canyons that contain complex coniferous forest structures. Because no known occurrences or suitable habitats are present in the project vicinity, this species is not considered further.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*). Candidate for Federal listing. This secretive species occurs in mature riparian forests of cottonwoods and other large deciduous trees with a well-developed understory of tall riparian shrubs. It also is not known to occur in the cottonwood corridor along the Colorado River 2 miles north of the project area; occurrence there is unlikely due to the patchy nature of the stands and the general lack of a tall-shrub understory. Because no known occurrences or suitable habitats are present in the project vicinity, this species is not considered further.

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

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

## Environmental Consequences

### *Proposed Action*

The Canada lynx, Mexican spotted owl, and western yellow-billed cuckoo and the Endangered Big River fishes are not expected to be impacted based on habitat types present and documented occurrences. If a vegetation treatment would be proposed in an area that could possibly affect any of the aforementioned species, then a formal consultation with the USFWS would take place prior to project implementation. Therefore, the Proposed Action would have **No Effect** on these species.

### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on Federally listed, proposed, or candidate threatened or endangered wildlife would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for impacts on wildlife habitats as a result of oil and gas activities.

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

#### Affected Environment

Six BLM sensitive plant species with habitat and/or occurrence records in Garfield County: DeBeque milkvetch (*Astragalus debequaeus*), Naturita milkvetch (*Astragalus naturitensis*), Piceance bladderpod (*Lesquerella parviflora*), Roan Cliffs blazing star (*Mentzelia rhizomata*), Harrington's penstemon (*Penstemon harringtonii*), and Cathedral Bluffs meadow-rue (*Thalictrum heliophilum*).

DeBeque Milkvetch (*Astragalus debequaeus*). This perennial forb grows in varicolored, fine textured, seleniferous, or saline soils of the Atwell Gulch Member of the Wasatch Formation at elevations between 5,000 and 6,000 feet. This geological formation is found in the Colorado River Valley between DeBeque and Rifle. Habitat for this plant occurs within pinyon-juniper woodland and desert shrub vegetation zones.

Naturita Milkvetch (*Astragalus naturitensis*). Naturita milkvetch is a perennial forb which grows on sandstone mesas, ledges, crevices, and slopes within pinyon-juniper woodlands. It occurs at elevations between 5,000 and 7,000 feet. These habitats are found west of Battlement Mesa.

Piceance Bladderpod (*Lesquerella parviflora*). Piceance bladderpod is a prostrate perennial forb occurring in shale outcrops of the Green River Formation, on ledges and slopes of canyons in open areas. It occurs at elevations between 6,200 and 8,600 feet. This habitat is found west of Rifle.

Roan Cliffs Blazing Star (*Mentzelia rhizomata*). This rhizomatous perennial forb is found in steep, eroding talus slopes of shale within the Green River Formation at elevations between 5,800 and 9,000 feet. This habitat is present west of Rifle.

Harrington's Penstemon (*Penstemon harringtonii*). Harrington's penstemon is a perennial forb found in open sagebrush sites, in sagebrush sites with encroaching pinyon and juniper, and on the edges of pinyon-juniper woodlands. Soils are typically rocky loams and rocky clay loams derived from basalt parent materials. It grows at elevations between 6,200 and 9,200 feet. This habitat is present east of Battlement Mesa, within the Colorado, Eagle, and Roaring Fork River drainages.

Cathedral Bluffs Meadow-rue (*Thalictrum heliophilum*). This perennial forb is endemic to sparsely vegetated steep shale talus slopes of the Green River Formation, where it occurs at elevations between 6,300 and 8,800 feet. This habitat is present west of Rifle.

#### Environmental Consequences

##### *Proposed Action*

Three of these plant species—Piceance bladderpod, Roan Cliffs blazing star, and Cathedral Bluffs meadow-rue—occur in shale outcrops or eroding shale talus slopes, and are not present in habitats

proposed for vegetation treatments. Therefore, the Proposed Action would not affect these species. Two species—DeBeque milkvetch and Naturita milkvetch—typically occur in sparsely vegetated sites but within habitat types proposed for treatments. Potential direct impacts to these species could result from crushing under equipment, or burial under mulched woody debris. Negative indirect impacts could result from introduction or increase of noxious weeds or other non-native invasive species in response to disturbance from project implementation. To prevent these impacts, botany surveys would be conducted prior to project implementation.

Removal of trees or mowing of sagebrush would not occur within 300 meters of any occurrences of special status plants. A potential positive indirect benefit could result from treatment of existing noxious weed infestations. If noxious weed treatments are proposed within or adjacent to any occurrence of these species, treatments would be designed to prevent negative impacts to Sensitive plants. Modifications may include restrictions on use of specific herbicides, or restriction to exclusively manual treatments within 300 meters of special status plants.

Harrington's penstemon occurs within habitat types proposed for treatment. Potential direct impacts to this species could result from crushing under machinery used in treatment implementation, or from burial under woody mulch. These impacts could cause mortality of individual plants, or reduced growth or seed production. Potential negative indirect effects could result from introduction or increase of noxious weeds during project implementation. Potential positive indirect effects could also result by removal of encroaching pinyon and juniper trees from sagebrush habitat and treatment of noxious weeds. Cumulative effects on this species include oil and gas development projects and range improvement projects. While not all potentially suitable habitats have been surveyed, estimates of potential habitat and population numbers have been calculated based on collective survey and monitoring data.

Total cumulative impacts to this species from known and anticipated development projects are estimated to affect less than 1% of this estimated total population. Proposed habitat treatment projects could contribute an additive impact to this total, but the additive amount would be negligible. To reduce the risk of negative impacts, botany surveys would be conducted in all potential habitats during the project planning phase. Where Harrington's penstemon occurs within proposed treatment areas, special restrictions would be incorporated to avoid or minimize negative impacts. These may include

- conducting treatments in late fall or winter, when plants are dormant
- placing restrictions on use of mechanized equipment
- incorporating site-specific native seeding to aid in habitat restoration

With these protective features, the Proposed Action may affect individual plants but is not expected to result in a trend towards Federal listing. Implementation of the Proposed Action may result in a positive impact on this species through habitat improvements and removal of competing vegetation.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on BLM sensitive plants would be the same as the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

***BLM Sensitive Animal Species***

Affected Environment

BLM sensitive animal species with habitat and/or occurrence records in the portion of the CRVFO that includes the project area and vicinity are listed in Table 2 and discussed following the table.

<b>Table 2. Occurrence of BLM Sensitive Animal Species in the Project Area</b>		
<b>Common Name</b>	<b>Habitat</b>	<b>Potential for Occurrence</b>
<b>MAMMALS</b>		
Fringed myotis	Roosts in caves or mines near pine forests, oak brush, greasewood or saltbush shrublands at elevations up to 7,500 feet.	Possible
Townsend's big-eared bat	Roosts in caves or rock crevices near semi-desert shrublands and pinyon-juniper woodlands.	Possible
<b>BIRDS</b>		
Northern goshawk	Nests and hunts in expansive conifer woodlands and stands of aspen at montane and subalpine elevations; vagrant in pinyon-juniper in winter.	Possible
Ferruginous hawk	Inhabits open, semi-desert shrublands; nests in cliffs or trees.	Unlikely – outside normal range
Peregrine falcon	Nests on high cliffs, especially near major rivers and reservoirs.	Possible
Bald eagle	Nests and roosts along the Colorado River riparian corridor. Hunts for fish and waterfowl along the river and large tributaries.	Present in along Colorado River in project region
Greater Sage-grouse	Limited to diverse age-class stands of sagebrush and shrub-steppe habitats	Not present in area of proposed habitat treatments
Brewer's sparrow	Large sagebrush shrublands.	Possible nester in sagebrush
<b>REPTILES</b>		
Midget faded rattlesnake	Habitat varies from riparian to semi-desert shrublands and foothills.	Possible at low elevations and far west end of CRVFO area
<b>AMPHIBIANS</b>		
Great Basin spadefoot	Rocky canyons, shrublands, semi-desert shrublands, or pinyon-juniper woodlands with available water sources for reproduction.	Possible at low elevations and far west end of CRVFO area
Northern leopard frog	Wet meadows and the banks and shallow areas of ponds, marshes, lakes, streams, reservoirs, ditches.	Possible
<b>FISH</b>		
Bluehead sucker	Small to mid-size tributaries in the upper Colorado River basin.	Present in Colorado River tributaries
Flannelmouth sucker	Small to mid-size tributaries in the upper Colorado River basin.	Present in Colorado River
Mountain sucker	Rivers and streams with gravel, sand, and mud substrates.	Unlikely in lower Colorado River
Roundtail chub	Small to mid-size tributaries in the upper Colorado River basin.	Present in Colorado River
Colorado River cutthroat trout	Cold to cool water perennial streams, including small streams.	Present along several creeks in area

Fringed Myotis (*Myotis thysanodes* and Townsend's Big-eared Bat (*Corynorhinus townsendii*) – Loss of large trees, potentially also used for roosting, would be negligible. No new loss of habitat above which the bats could search for aerial prey would occur.

Peregrine Falcon (*Falco peregrinus*) – The peregrine falcon was removed from the Federal list of threatened and endangered species in 1999 and has steadily increased in numbers throughout its range. It is listed as a state species of concern. This species was originally listed due to population declines from DDT related reproductive failure. It primarily nests within the planning area on cliff ledges, along portions of the Colorado River.

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

Ferruginous Hawk (*Buteo regalis*) – The ferruginous hawk is common during winter throughout the eastern half of Colorado, with the northern extent of its range limited by the severity of the winter (Andrews and Righter 1992). Ferruginous hawk habitat consists of both grassland and shrubland ecosystems. Primary prey items include rabbits, prairie dogs, and ground squirrels (Kingery 1998). Junipers are the most commonly used trees for nesting in shrub-steppe and prairie ecosystems. The species is more likely to inhabit the western portion of the planning area, although no ferruginous hawk nests are known in the project area.

Bald Eagle (*Haliaeetus leucocephalus*) – Bald eagles nest and winter along portions of the Colorado River and its major tributaries within the WHMP planning area. Wintering bald eagles are generally present from mid-November to mid-April. Large cottonwood trees along the Colorado, Eagle, and Roaring Fork Rivers and major tributaries are used as roosting and perching sites, and these waterways provide the main food sources of fish (self-caught or stolen from other birds) and waterfowl. Upland habitats adjacent to these waterways are used as scavenging areas primarily for winter-killed mule deer and elk (USFWS 2008). Two other Federal laws protect the bald eagle: the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). Both laws prohibit killing or otherwise harming eagles, their nests, or eggs.

Greater Sage-grouse (*Centrocercus urophasianus*) – This species requires high-quality, diverse age-class stands of sagebrush and shrub-steppe habitats. No habitat treatments are expected to occur in occupied or suitable habitat for the greater sage-grouse. If any such treatments should occur, they would comply with the conservation measures recommended by the Greater Sage-Grouse National Technical Team.

Brewer's Sparrow (*Spizella breweri*) – If the species were to occur, activities occurring within the home range of a nesting pair could cause individuals to shift their feeding patterns and to locate their nests to avoid the disturbance (noise, dust, human activity). However, this impact would be limited to the nesting season and would not be an issue for long-term production and maintenance operations. As a precaution, treatments in sagebrush would not occur from May 1 to July 1 to protect nesting pairs unless a survey is completed and no nests are found.

Midget Faded Rattlesnake (*Crotalus viridis concolor*) – This species is mostly limited to areas with rock outcrops that provide escape cover, thermal cover, and especially hibernacula. These are crucial components for reproduction and survival and are uncommon in the project vicinity. Though the midget

faded rattlesnake is known to occur in northwestern Colorado in a variety of habitats, including pinyon and juniper woodlands and shrublands, it is not expected to be affected by habitat treatments.

Great Basin Spadefoot (*Spea intermontana*) – This species is mostly found in rocky canyons, shrublands, semi-desert shrublands, or pinyon-juniper woodlands with available water sources for reproduction. Direct effects on this species could include injury or mortality as a result of equipment activities though this is very unlikely. Overall potential for effects is low, particularly at the population level.

Northern Leopard Frog (*Rana pipiens*) – The northern leopard frog is limited to perennial waters, including ponds and slow-flowing perennial streams or persistent portions of intermittent streams. It requires good water quality and abundant aquatic or shoreline vegetation. Suitable habitat occurs along some streams within the WHMP boundary. In the unlikely event that habitat treatments would be conducted in proximity to occupied waters, mitigation measures would be applied.

Flannelmouth Sucker (*Catostomus latipinnis*), Bluehead Sucker (*C. discobolus*), and Roundtail Chub (*Gila robusta*) – Similar to the endangered Colorado River fishes described previously, these species are vulnerable to alterations in flow regimes in the Colorado River that affect the availability and suitability of spawning sites and habitats needed for development of the larvae. Also similar to the endangered big-river fishes, these BLM sensitive species are adapted to naturally high sediment loads and therefore would not be affected by increased sediment transport to the Colorado River. These species are vulnerable to inflow of sediments into smaller streams by smothering the eggs of these species. Any treatments in proximity to surface waters would apply mitigation measures to minimize the risk of adverse impacts.

Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) – There are several streams within the WHMP that are known to be occupied by Colorado River cutthroat trout. This trout inhabits coldwater streams and lakes with adequate spawning habitat present in the spring of the year. No habitat treatments are expected to be conducted in proximity to trout-bearing streams. If so, mitigation measures to minimize the risk of adverse impacts would be applied.

### Environmental Consequences

#### *Proposed Action*

In general, the potential effects to special status wildlife from the proposed habitat treatments would be similar to those described for other wildlife (see the sections on Wildlife, Aquatic and Wildlife, Terrestrial), although they are potentially more vulnerable due to their relative rarity and sensitivity. Populations of some special status species may also benefit more from fuels reduction and control of weeds often resulting from habitat treatments. Based on the information presented above, no adverse impacts to special status species are expected to result from the habitat types and the habitat treatment methods associated with the Proposed Action.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on BLM sensitive wildlife species would be the same as those under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

## Vegetation

### *Sagebrush Steppe*

Sagebrush steppe habitats include a diversity of grasses, forbs, and low-growing shrubs. Dominant shrubs include three subspecies of big sagebrush: basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), Wyoming big sagebrush (*A. t. wyomingensis*), and mountain big sagebrush (*A. t. vaseyana*). Common grasses include bluebunch wheatgrass (*Pseudoroegneria spicata*), Great Basin wildrye (*Leymus cinereus*), salina wildrye (*Leymus salina*), Idaho fescue (*Festuca idahoensis*), bottlebrush squirreltail (*Elymus elymoides*), Indian ricegrass (*Achnatherum hymenoides*), and Sandberg bluegrass (*Poa secunda*). An abundance of forbs also grow in the sagebrush steppe, including lupines (*Lupinus* sp.), paintbrush (*Castilleja* sp.), sulphur-flower buckwheat (*Eriogonum umbellatum*), and arrowleaf balsamroot (*Balsamorhiza sagittata*).

Impacts to this habitat type over decades of use by domestic livestock have led to encroachment by invasive non-native plants, particularly cheatgrass but also including the annual forbs such as Russian-thistle and kochia. Crested wheatgrass, a non-native perennial bunchgrass of Eurasian origin, has been widely seeded into degraded rangeland throughout the region in an effort to provide forage for livestock in areas where the native grass cover was removed by unsustainable levels of grazing. Cheatgrass is of particular concern because it can alter historic fire regimes by increasing fire frequency, with devastating results for native sagebrush communities. Utah juniper (*Juniperus osteosperma*) and pinyon pine (*Pinus edulis*) are also expanding into some sagebrush areas as a result of the reduced competition provided by degraded grass cover and to prolonged fire suppression, contributing to loss of sagebrush habitat.

### *Pinyon-Juniper Woodland*

Pinyon-juniper woodlands generally have a sparse understory plant community of smaller bunchgrasses and forbs. The primary tree species are Utah juniper and pinyon pine. Common grasses include muttongrass (*Poa fendleriana*), Indian ricegrass, and bottlebrush squirreltail. Rock goldenrod (*Petrorhiza pumila*) is a characteristic perennial forb. Density and diversity of the understory community generally decreases as tree canopy density increases. Cryptobiotic soil crusts may be well-developed in undisturbed sites. These crusts, which contribute biologically available nitrogen to plant communities, are highly vulnerable to trampling impacts. Cheatgrass is often found beneath the driplines of individual trees, although the deeper shade beneath dense stands tends to reduce the establishment of many species of weeds.

### *Mixed Mountain Shrubland*

Mixed mountain shrublands occur at higher elevations where conditions are favorable to a diversity of shrub species. These include Gambel's oak (*Quercus gambelii*), chokecherry (*Padus virginiana*), serviceberry (*Amelanchier* spp.), mountain-mahogany (*Cercocarpus montanus*), antelope bitterbrush (*Purshia tridentata*), and snowberry (*Symphoricarpos* spp.) in addition to sagebrush. The dominant species in this type are mostly well-adapted to resprout following fire or other disturbances.

## Environmental Consequences

### *Proposed Action*

Under the Proposed Action, a variety of mechanical and manual treatments would be implemented to restore native plant communities. These methods are designed to achieve some of the same regenerative

results that would occur following natural disturbance events such as wildfires in these habitat types. Additionally, treatments of noxious and other invasive weeds and reseeding with desirable native species would reduce the negative impacts of noxious weeds and other invasive non-native species. Overall, these treatments would be beneficial to these habitats.

*No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on vegetation would be the same as the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

**Visual Resources**

Affected Environment

Lands administered by BLM CRVFO are classified as Visual Resource Management (VRM) Class I, II, III, and IV (see Figure 2). The objective for VRM Class I, II, III, and IV as defined in the BLM's Manual H-8410-1 Visual Resource Inventory (BLM 1986), are described below.

VRM Class I – The objective is to preserve the existing character of the landscape and to manage for natural ecological changes. The level of change to the characteristic landscape should be very low. Activities must not attract attention.

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

VRM Class III – The objective is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

VRM Class IV – The objective is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of the viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

The WHMP vicinity contains variety of landscape character types and varying degrees of alteration from human activities. It consists mainly of a broad stretch of the Colorado River valley floor, bordered by mesas, terraces, foothills, and steep mountain slopes. The Roan Cliffs provide a scenic backdrop to communities of Rifle and Parachute located along the I-70 corridor. Topography varies from drainage valley bottoms, to relatively flat mesas, to steep foothills rising to steeper mountain peaks or cliffs in the background. Numerous ephemeral drainages and gulches dissect the landforms adding to the variety of the topographic texture. The area is characteristic of agricultural land, scattered rural residences, small population centers, transportation corridors, utilities, and oil and gas development. Vegetation consists of pastoral land, sagebrush flats, pinyon-juniper woodlands, and mixed oak/mountain shrub communities.

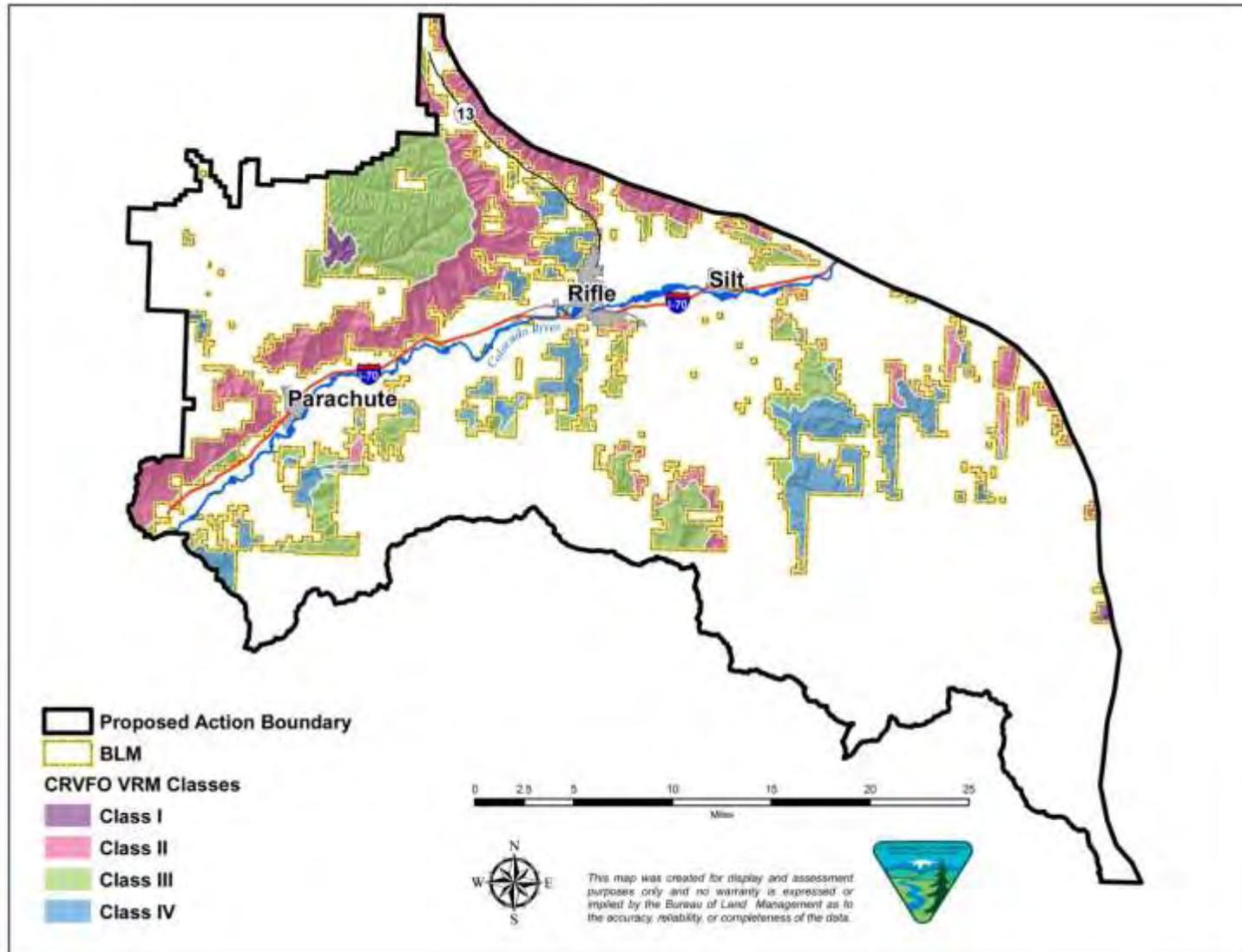


Figure 2. Visual Resource Management (VRM) Classes within the WHMP Project Area

## Environmental Consequences

### *Proposed Action*

To avoid or minimize impacts to visual resources, project proposals would require a detailed project description to effectively evaluate the impacts of a proposed project including location, method of vegetation treatment, size and magnitude. The VRM class objective for the proposed project location should be identified. The VRM class objective would reflect the management decision made in the CRVFO Resource Management Plans (RMPs) (BLM 1986 and BLM 2006). The project proposal should be evaluated to determine if the VRM objective would be met and if additional mitigation measures are required to reduce visual impacts.

Habitat treatments can alter the appearance of the vegetation and may contrast with adjacent vegetation by creating openings and obvious changes in color and texture due to the change in plant height. Treatments would be designed and areas flagged prior to treatment and visually monitored (in highly visible locations from major transportation corridors, population centers, and other scenic viewsheds within the Proposed Action boundary) during treatment to avoid the creation or enhancement of linear features within the landscape. Treatments would be designed to repeat natural mosaic openings found within the landscape, particularly when the treatment occurs within sagebrush and mixed mountain shrubland. Feathering or undulating edges would be incorporated into treatments where practicable to break up any distinct lines created in the landscape. Any new access roads or staging areas would be reclaimed once the project is complete to prevent further surface disturbance and visual contrast.

Over the long term, habitat treatments would likely improve visual resources and with the inclusion of design and mitigation measures no new contrast or long term impacts would be introduced.

### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on visual resources would be the same as the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

## **Wastes, Hazardous or Solid**

### Affected Environment

Implementation of the Proposed Action would require the use of fuel and lubricants to operate mechanical equipment, chainsaws, and vehicles for transportation. Some habitat treatments may also include use of chemical herbicides to control noxious or other invasive weeds. However, herbicide use is not part of the current Proposed Action, and use of herbicides would be conducted under the CRVFO's Integrated Weed Management Plan (BLM 2009a), for which potential impacts of, and constraints on, use of herbicides was disclosed and analyzed in EA #DOI-BLM-CO-N040-2009-0078.

## Environmental Consequences

### *Proposed Action*

In the event of a spill of fuel or lubricants from motorized or mechanized equipment, some potential exists for transport of those materials into drainages or other sensitive areas. To minimize this risk, fuel

and lubricants would be stored in appropriate containers, and refueling would occur in designated areas. In addition, habitat treatments using motorized equipment (dozers, backhoes, tractors, etc.) would avoid steep slopes and drainages to further minimize this potential risk. In situations involving use of motorized heavy equipment, topography and vegetation cover would pose little danger of spills or other inadvertent releases of chemicals, and adequate vegetated buffers would be maintained to minimize fluids reaching surface waters. In the unlikely event of a spill or other release, equipment operators would be required to promptly contain and remediate spills and report the incident to BLM personnel for follow-up.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on risk of environmental harm from spills or releases of fuel, lubricants, or other chemicals would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

### **Water Quality, Surface**

#### Affected Environment

Surface waters in the portion of the CRVFO area where habitat treatments would be conducted as mitigation for oil and gas operations consist primarily of minor tributary streams, ranging from ephemeral to perennial, that drain to the Colorado River. The Colorado River flows generally westerly through the portion of the CRVFO in which treatments would occur. Artificial stock watering ponds are also present throughout areas likely to be selected for habitat treatments.

#### Environmental Consequences

##### *Proposed Action*

Habitat treatments would remove some vegetation and could alter soil conditions through compaction or displacement associated with use of heavy equipment or off-road vehicles (see section on Soils). These impacts, which would increase the potential for erosion and transport to surface waters, would be minimized by selecting appropriate equipment, avoiding operations during wet conditions, avoiding operations on steep slopes or unstable soils, and retaining a vegetated buffer at least 100 feet wide adjacent to riparian habitats, along perennial streams, and around ponds supporting aquatic vertebrates (amphibians or fishes). Although some soil displacement is likely to result from typical operations using heavy equipment, sediment transport to surface waters is expected to be negligible and of short duration. Habitat treatments aimed at increasing cover by perennial grasses, while potentially increasing runoff in the short term, are expected to reduce runoff in the long term, reducing sediment transport to surface waters.

Some additional risk of pollution of surface waters would result from use of motorized equipment and associated fuel and lubricants. These risks are also expected to be negligible (see section on Wastes, Hazardous or Solid).

##### *No Action Alternative (Current Management):*

Under the No Action Alternative, impacts of habitat treatments on surface waters would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an

individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

## **Wetlands and Riparian Areas**

### Affected Environment

Riparian zones and wetlands exist throughout the project area along most perennial streams and substantial numbers of ephemeral or intermittent streams. Dominant vegetation along the riparian corridors of typical streams in the part of the CRVFO area where habitat treatments are anticipated include tall shrubs, with or without associated cottonwoods and conifers, often mixed with low shrubs and a lush herbaceous layer of tall forbs and graminoids (grasses, sedges, and rushes). Many of these areas, especially along slow-flowing reaches or in adjacent basins, support cattails, bulrushes, and other wetland herbs. Wetlands may also exist along some seeps and springs within treatment areas.

### Environmental Consequences

#### *Proposed Action*

The proposed habitat treatments would not be conducted in riparian areas or adjacent to wetlands except when removal of tamarisk and Russian-olive is the focus of the treatments. In other situations, motorized equipment would not be used within 100 feet of a seep or spring, wetland, or riparian area.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on wetlands and riparian areas would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

## **Wildlife, Aquatic**

### Affected Environment

The WHMP area includes a number of special status fish species, including Federally listed threatened and endangered species and BLM sensitive species (see section on Special Status Species). In addition to the special status fishes are a variety of native and non-native fish species and other aquatic organisms that occur within the WHMP area and do not qualify as special status species.

At higher elevations (generally above 6,500) of the WHMP, surface waters support coldwater sportfishes comprising three introduced species—brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), and brown trout (*Salmo trutta*)—as well as introduced subspecies of cutthroat trout (*Oncorhynchus clarki* ssp.). Other higher elevation species include native nongame fishes such as the mottled sculpin (*Cottus bairdi*) and speckled dace (*Rhinichthys osculus*) and two introduced nongame species, the white sucker (*Catostomus commersonii*) and longnose sucker (*C. catostomus*).

At elevations below approximately 6,500 feet, which includes most of the anticipated habitat treatment areas, surface waters support primarily the warmwater species discussed in the section on Special Status Species and several introduced species. The introduced non-native species at lower elevations of the project area include the carp (*Cyprinus carpio*), fathead minnow (*Pimephales promelas*), white sucker,

and longnose sucker. Introduced sportfishes include the largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieu*), yellow perch (*Perca flavescens*), bluegill (*Lepomis macrochirus*), and channel catfish (*Ictalurus punctatus*).

In addition to fishes, larval forms of amphibians present in the WHMP area—including the tiger salamander (*Ambystoma tigrinum*), Woodhouse's toad (*Bufo woodhousii*), and western chorus frog (*Pseudacris triseriata*)—are aquatic and breathe through gills. In some locales, tiger salamanders achieve adult reproductive status while retaining their gills; these neotenic forms remain fully aquatic throughout their lives. Because they are tied to surface water for breeding, amphibians are vulnerable to the same types of physical and environmental stressors as are fish, including chemical contaminants.

Aquatic macroinvertebrates living in perennial streams during a portion of their lifecycles include larvae of stoneflies, mayflies, and some caddisflies in fast-flowing reaches with rocky or detrital substrates. In slow-flowing portions creeks with fine substrate, aquatic macroinvertebrates include the larvae of midges, mosquitoes, and other caddisflies in addition to adult forms of aquatic beetles and true bugs. These species are able to tolerate relatively warm, turbid, and poorly oxygenated waters, and their more abbreviated larval stages allow them to reproduce in intermittent streams and in seasonally inundated overbank areas.

### Environmental Consequences

#### *Proposed Action*

It should be noted that treatments will not occur within 100 feet of any perennial stream or other persistent surface water, thereby minimizing impacts to aquatic wildlife species. No treatments involving reduction in vegetation cover and biomass would be conducted in riparian to ensure continued integrity of the stream habitat and to reduce temperature fluctuations and sedimentation.

Mechanical treatments in pinyon-juniper woodlands would consist primarily of thinning and piling of debris, often in combination with handcutting, and then burning or chipping/shredding. Any accelerated rates of runoff and sedimentation from upland areas as a result of mechanical treatments would progressively diminish as these surrounding areas achieved proper functioning condition. For mechanical treatments in the shrubland communities, mowing of sagebrush, followed by seeding or drilling would be the most likely to occur. Treatments would target woody species (e.g., big sagebrush, rabbitbrush, and greasewood), with the goal of encouraging certain other species of shrubs and native perennial grasses and forbs.

Removal of vegetation could temporarily increase erosion of surficial soils into nearby streams. Increases in water yield and surface water runoff from the treated areas may occur in response to high-intensity storm events. However, because of the small scale of most treatments, the retention of most of the plant cover in a treated area, and the maintenance of vegetated buffers along streams and around ponds, treatment projects are not expected to cause significant habitat changes for aquatic organisms.

Over the long-term, all treatment methods that remove non-native and competing vegetation are likely to benefit of aquatic habitats by reducing sediment inflow. Therefore, vegetation treatments would eventually increase the amount of suitable habitat, potentially increasing populations of desirable species requiring relatively clean waters.

Another long-term benefit of the removal of woody fuels from riparian habitats is the decrease in the risk of a future high severity wildfire. Pinyon and juniper removal would greatly reduce the chance of a high-

intensity fire that could spread to woody riparian vegetation. Diverse, vigorous, and dense stands of native riparian vegetation help to protect streams from the direct and indirect effects of wildfires by buffering streams from temperature increases and filtering ash, woody debris, and mud carried in runoff from nearby slopes.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on aquatic wildlife species would be the same as those under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

### **Wildlife, Terrestrial**

#### Affected Environment

##### *Mammals*

The two wild ungulates (hoofed mammals) generating the most public interest are the mule deer (*Odocoileus hemionus*) and Rocky Mountain elk (*Cervus elaphus nelsoni*). During summer, deer and elk occupy higher elevation forests and forest-meadow mosaics that provide a combination of thermal and hiding cover, lush forage, and nearby water. During winter, the animals migrate to lower elevations that provide warmer temperatures, less snow cover, and available forage. Shrub-dominated habitats, especially on west- and south-facing slopes are typically preferred and may support substantial concentrations of animals. Shrubs have the advantage of being more nutritious than the dead remnants of herbaceous growth in winter and more available by protruding above the snow cover.

Winter range for deer and elk is essential to the survival of these species. The fragmentation and quality of big game winter range is of special concern to CPW because much of the lower elevation areas are private lands subject to conversion to agricultural lands or industrial, commercial, and residential developments. As private lands become developed and native habitat is converted to unsuitable habitat or is lost altogether, more emphasis is placed on BLM lands that contain winter habitats. In addition, concentration of deer and elk onto smaller areas of winter range has the potential to degrade these habitats and reduce their carrying capacity. In many areas, browse (shrub) species show poor vigor and moderate to severe hedging.

Moose occasionally use BLM lands but to a much less extent than deer and elk. Since 2005, CPW has been undertaking a multi-year moose reintroduction project on the Grand Mesa, east of Grand Junction. Individuals from this reintroduction, and their presumed offspring, have been seen in increasing numbers in the WHMP project vicinity.

Large carnivores present in the project area include the mountain lion (*Puma concolor*) and black bear (*Ursus americanus*). Mountain lions move seasonally to generally follow migrations of their preferred prey, mule deer. Two medium-sized carnivores, the coyote (*Canis latrans*) and bobcat (*Lynx rufus*), are also present in the region in open habitats and broken or wooded terrain, respectively, where they hunt for small mammals, reptiles, and ground-dwelling birds. Smaller carnivores in habitats similar to those near the project site include the ringtail (*Bassariscus astutus*) and spotted skunk (*Spilogale gracilis*) in rocky areas at higher elevations and the raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*) in riparian and agricultural/urban areas at lower elevations. Other small carnivores in the project vicinity

include the long-tailed weasel (*Mustela frenata*) in nearly all habitats, the mink (*M. vison*) along perennial streams, and the American badger (*Taxidea taxus*) in agricultural lands and grass or shrub-grass habitats.

Although of less economic importance or public interest than the priority species described above, small mammals are ecologically important as prey species. Small herbivores in the project vicinity include larger rodents such as the beaver (*Castor canadensis*), muskrat (*Ondatra zibethica*), yellow-bellied marmot (*Marmota flaviventris*), pine squirrel (*Tamiasciurus hudsonicus*), rock squirrel (*Spermophilus variegatus*), Wyoming ground squirrel (*S. richardsonii*), golden-mantled ground squirrel (*S. lateralis*), and chipmunks (*Neotamias* spp.) and nocturnal small mammals such as the northern pocket gopher (*Thomomys talpoides*) bushy-tailed woodrat (packrat) (*Neotoma cinerea*), deer mouse (*Peromyscus maniculatus*), and long-tailed vole (*Microtus longicaudus*). Other herbivores include the white-tailed jackrabbit (*Lepus townsendii*) and mountain cottontail (*Sylvilagus nuttallii*) at higher elevations and the black-tailed jackrabbit (*L. californicus*) and desert cottontail (*S. audubonii*) at lower elevations.

### Birds

The Migratory Bird Treaty Act (MBTA) provides Federal protection for native passerines (flycatchers and songbirds) as well as birds of prey, migratory waterbirds (waterfowl, wading birds, and shorebirds), and other species such as doves, hummingbirds, swifts, and woodpeckers. Within the context of the MBTA, “migratory” birds include non-migratory “resident” species as well as true migrants, essentially encompassing virtually all native bird species except upland fowl managed for hunting by states. For most migrant and resident species, nesting habitat is of special importance because it is critical for supporting reproduction in terms of both nesting sites and food. In addition, because birds are generally territorial during the nesting season, their ability to access and utilize sufficient food is limited by the quality of the territory occupied. During non-breeding seasons, birds are generally non-territorial and able to feed across a larger area and wider range of habitats.

Numerous migratory bird species occupy, or have the potential to occupy, habitat types subject to vegetation manipulation in conjunction with habitat treatments. Migratory bird species classified by the BLM as sensitive species are addressed under the section on Special Status Species. The current section addresses migratory birds that may inhabit the proposed project area. Emphasizing the need to conserve declining species, the U.S. Fish and Wildlife Service (USFWS) has published a list of Birds of Conservation Concern (BCC) that deserve prompt conservation attention to stabilize or increase populations or to secure threatened habitats. This section also addresses species within the project area that listed as BCC species (USFWS 2008). This analysis focuses on BCC species, non-BCC species that are Neotropical (long-distance) migrants, and raptors—three groups highly vulnerable to habitat loss or modification on their breeding grounds.

Pinyon-Juniper Woodlands – The pinyon-juniper community type provides cover, food, and nesting habitat for a variety of migratory birds. Bird species on the BCC list that are present in the CRVFO area and mostly associated with pinyon-juniper habitats include the golden eagle (*Aquila chrysaetos*), flammulated owl (*Otus flammeolus*), pinyon jay (*Gymnorhinus cyanocephalus*), juniper titmouse (*Baeolophus griseus*), and, in the far western part of the project vicinity, the gray vireo (*Vireo vicinior*). Other perching birds in pinyon-juniper include Neotropical migrants such as the plumbeous vireo (*Vireo plumbeus*), mountain bluebird (*Sialia currucoides*), black-throated gray warbler (*Dendroica nigrescens*), Virginia’s warbler (*Oreothylpis virginiae*), lark sparrow (*Chondestes grammacus*), and, at lowest elevations, the black-throated sparrow (*Amphispiza bilineata*). Raptorial species nesting in pinyon-juniper habitat in addition to the golden eagle and flammulated owl include the red-tailed hawk (*Buteo jamaicensis*), Swainson’s hawk (*B. swainsoni*), Cooper’s hawk (*Accipiter cooperii*), sharp-shinned hawk (*A. striatus*), and northern pygmy-owl (*Glaucidium gnoma*).

Mixed Mountain Shrublands – The vegetation of mixed mountain shrublands varies substantially depending on elevation, slope, aspect, and soil. More mesic (moist) sites such as on north-facing slopes and along minor drainageways are typically dominated by Gambel’s oak and serviceberry, while more xeric (dry) sites such as south-facing slopes are typically dominated by mountain-mahogany, bitterbrush, snowberry, and sagebrush. The dense cover, tall height, and abundant acorns and berries of mesic oak-serviceberry stands provide cover, forage, and nesting habitat for the wild turkey (*Meleagris gallopavo*). Other species include Neotropical migrants such as the dusky flycatcher (*Empidonax oberholseri*), lazuli bunting (*Passerina amoena*), lesser goldfinch (*Carduelis psaltria*), black-headed grosbeak (*Pheucticus melanocephalus*), and spotted towhee (*Pipilo maculatus*).

Sagebrush Shrublands – The sagebrush shrubland habitat type, like the mixed mountain shrubland type, varies considerably depending on elevation, slope, aspect, and soil. Extensive stands of Wyoming big sagebrush provide cover, food, and nesting habitat for one BCC species, Brewer’s sparrow (*Spizella breweri*). Another sagebrush obligate, the sage sparrow (*Amphispiza belli*), is potentially present in sagebrush shrublands of the CRVFO but is seldom encountered here, including the WHMP project vicinity. Four other Neotropical migrants, the Say’s phoebe (*Sayornis saya*), western kingbird (*Tyrannus verticalis*), western meadowlark (*Sturnella neglecta*), and vesper sparrow (*Pooecetes gramineus*), are relatively common in this type and also occur in sparse pinyon-juniper or grassland types. Three BCC raptor species—the ferruginous hawk (*Buteo regalis*), golden eagle, and prairie falcon (*Falco mexicanus*)—may hunt in expansive sagebrush stands but nest in nearby trees or cliff areas. Other raptors that use sagebrush habitats for hunting are the red-tailed hawk, Swainson’s hawk, northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*).

Riparian Woodlands and Shrublands – Riparian woodlands (e.g., consisting mostly of linear stands of cottonwoods along major streams and aspen, willows, and other tall shrubs along smaller streams) provide cover, feeding, and nesting habitats for a much greater number of species and individuals than adjacent habitats due to the vertical and horizontal diversity of the community, the proximity to water, and typically the proximity to other habitat types. In general, habitat treatments in riparian woodlands and shrublands would not occur in conjunction with the WHMP. However, some treatments could be conducted in or near riparian areas in conjunction with removal of tamarisk and Russian-olives. These would generally be poor quality riparian areas.

Bird species found in cottonwood forests in the WHMP vicinity include two BCC species: the bald eagle (*Haliaeetus leucocephalus*), which was recently removed from the Federal list of threatened or endangered species, and Lewis’s woodpecker (*Melanerpes lewis*). Neotropical migrants include the cordilleran flycatcher (*Empidonax occidentalis*), Bullock’s oriole (*Icterus bullockii*), yellow warbler (*Dendroica petechia*), and American goldfinch (*Carduelis tristis*) in cottonwood woodlands and the willow flycatcher (*Empidonax traillii*), song sparrow (*Melospiza melodia*), and fox sparrow (*Passerella iliaca*) in willow shrublands. Raptors commonly associated with cottonwood woodlands include the red-tailed, Cooper’s, and sharp-shinned hawks, the great horned owl (*Bubo virginiana*), and the long-eared owl (*Asio otus*). A large wading bird, the great blue heron (*Ardea herodias*) nests singly or colonially in mature cottonwoods and may travel several miles to hunt for fish in streams, ponds, and lake margins.

#### *Reptiles and Amphibians*

Species most likely to occur in the WHMP project vicinity include the short-horned lizard (*Phrynosoma hernandesi*), sagebrush lizard (*Sceloporus graciosus*), plateau (fence) lizard (*Sceloporus undulatus*), tree lizard (*Urosaurus ornatus*), plateau striped whiptail (*Cnemidophorus velox*), gopher snake (bullsnake) (*Pituophis catenifer*), and yellow-bellied racer (*Coluber constrictor*), all of which may be found in sagebrush shrublands and pinyon-juniper woodlands. Additional species potentially present in riparian

areas include the milk snake (*Lampropeltis tiangularis*), smooth green snake (*Liochlorophis vernalis*), and western terrestrial garter snake (*Thamnophis elegans*).

The project area also provides potentially suitable habitat for the Great Basin spadefoot toad and northern leopard frog (see section on Special Status Species) and three additional amphibians, the tiger salamander, Woodhouse's toad and western chorus frog (see section on Wildlife, Aquatic). Within the WHMP vicinity, Woodhouse's toad could occur along ephemeral washes that do not support fish and contain pools of water for a period of at least a few weeks every spring. The chorus frog occurs primarily in cattail and bulrush wetlands and along the vegetated margins of seasonal or perennial ponds and slow-flowing streams. Some existing stock ponds and slow-flowing portions of the drainages are potentially suitable for the tiger salamander.

### Environmental Consequences

#### *Proposed Action*

Wildland fire, spread of weeds, development, and other factors have caused habitat fragmentation and the loss of connectivity between blocks of habitat, especially in lower elevation forests, shrub steppe, and riparian areas. Fragmentation has isolated some animal populations and reduced the ability of populations to disperse across the landscape or in some cases cause them to travel further to find suitable habitat. Treatments that restore native vegetation in disturbed areas is expected to reduce fragmentation and restore connectivity among blocks of similar habitat.

Restoring a variety of native plant species, possibly coupled with control of noxious weeds and other invasive species, would maintain or improve migratory bird nesting habitat in the long term. Potential impacts to habitat of non-game mammals, native game birds, amphibians, and reptiles are expected to be relatively minor and short term and would be offset in the long term by improved habitat. In general, habitat mitigation treatments would provide a mosaic of perennial grass stands and patches of big sagebrush.

Mechanical methods are effective in restoring wildlife habitat and are the primary means of reseeding a site. However, equipment is often noisy, and noise may alter animal behavior or cause wildlife to leave an area during the disturbance period. Manual treatments can be expensive, but they allow for more precise vegetation control than other methods and are often suitable in areas with sensitive wildlife species. Hand-held equipment, including chainsaws, create noise that can disturb animals and cause them to flee or alter their behavior or habitat use. These effects would be short-term and not likely to have much effect on the long-term health and habitat use of wildlife in the treatment area.

Mechanical treatments can be designed to avoid more important sagebrush species or patches of habitat that are in better condition. Mechanical treatments would leave at least 70% of sagebrush habitat intact and would be performed in alternating, irregularly shaped "strips" of treated and untreated vegetation. Disturbed areas would be no wider than 350 feet to maintain bird species diversity (Castrale 1982). Mechanical treatments in pinyon-juniper woodlands would consist primarily of thinning and machine piling of debris, as well as chipping/shredding and chaining to reduce pinyons and junipers on sites where they have invaded. As a result of tree removal, native perennial grass, forb, and shrub species would be expected to increase on the site (Clary 1971, Jacobs and Gatewood 1999).

Treatments that remove hazardous fuels from public lands reduce the spread of weeds and other invasive vegetation, and restore native vegetation in areas that have been degraded by human-related activities would benefit wildlife habitat. Treatments would help to restore natural succession and disturbance

processes to which native wildlife have adapted. In addition, treatments would increase plant diversity across landscapes, and in turn increase the number and types of wildlife that can be supported.

Opening dense stands of pinyon and juniper benefits edge species (e.g., mule deer and wild turkeys) as well as ground-feeding and ground-nesting birds and several species of small mammals, thereby promoting species diversity (Scott and Boeker 1977). Leaving slash, debris, and downed trees provides microhabitat for rabbits and songbirds. To optimize conditions for deer, however, cover by slash and debris would be no greater than 20% of the treated site, as recommended by Terrell and Spillet (1975).

Mechanical treatments can benefit oak woodlands by increasing oak sprouts for ungulate forage, reducing oak dominance to promote the development of forbs and grasses as forage and cover, and protecting oak stands from encroachment by pines to ensure future mast production (Payne and Bryant 1998). Lack of disturbance can limit the distribution, vigor, and growth of Gambel's oak (Vallentine 1989). Bulldozing generally results in more oak sprouting than hand cutting, and increases forage production for deer and other wildlife compared to untreated areas (Rutherford and Snyder 1983). However, mast-producing trees would be protected by limiting bulldozing to trees less than 3 inches diameter at breast height.

With regard to all of the treatment methods mentioned above, any harvested material left in the area would be windrowed or piled to provide hiding cover for small mammals, reptiles, and amphibians and, as the wood decays, sites for insects and other invertebrates used as prey by various species.

#### *No Action Alternative (Current Management)*

Under the No Action Alternative, impacts of habitat treatments on terrestrial wildlife would be the same as under the Proposed Action. Current management, consisting of designing and analyzing treatments on an individual project basis, would continue to be applied as mitigation for direct and indirect impacts on wildlife habitats as a result of oil and gas activities.

### **SUMMARY OF CUMULATIVE IMPACTS**

Until relatively recently, modifications of the region have been characteristic of agricultural and ranching lands, with localized industrial impacts associated with the railroad and I-70 corridors. More recently, these changes have been cumulative to the growth of residential and commercial uses, utility corridors, oil and gas developments, and other rural industrial uses, including extensive sand and gravel operations along the Colorado River. These increasing levels of human activity and habitat loss, modification, and fragmentation have accelerated the accumulation of impacts on deer and elk winter range. Cumulative impacts have included direct habitat loss, indirect habitat loss due to habitat fragmentation and relative avoidance of human activity, and reductions in habitat quality due to expansion of noxious weeds and other invasive species. These impacts are also cumulative to impacts resulting from gradual, long-term changes in winter habitat quality due to protracted fire suppression and protracted use by domestic livestock. Impacts of human use in the CRVFO area were documented in the FSEIS for the 1999 RMP amendment (BLM 1999a: 4-1 to 4-68).

Although none of the cumulative impacts described in the 1999 FSEIS was characterized as significant, and while new technologies and regulatory requirements have reduced the impacts of some land uses, it is nonetheless clear that past, present, and reasonably foreseeable future actions has had and will continue to have adverse effects on various elements of the human environment. The anticipated impact levels for existing and future actions range from negligible to locally major, and primarily negative, depending on the specific resource or resource use. The primary reasons for this assessment are twofold: (1) the amount of development, including oil and gas development, continues to increase in the area, although more

slowly in recent years due to the general economic downturn and low prices for natural gas; and (2) residential and commercial expansion, as well as much of the oil and gas development, has occurred on private lands where mitigation measures to protect and conserve resources are not applied as rigorously, or at all.

**PERSONS AND AGENCIES CONSULTED**

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**INTERDISCIPLINARY REVIEW**

BLM staff who participated in the preparation of this programmatic EA are listed in Table 3.

<b>Table 3. BLM Interdisciplinary Team Authors and Reviewers</b>		
<i>Name</i>	<i>Title</i>	<i>Areas of Participation</i>
John Brogan	Archaeologist	Cultural Resources, Native American Religious Concerns
Allen Crockett, Ph.D.	Supervisory Natural Resource Specialist	Technical Review, NEPA Review
Shauna Kocman, Ph.D.	Hydrologist	Air Quality, Noise, Soils, Surface Water
Julie McGrew	Natural Resource Specialist	Visual Resources
Kimberly Miller	Outdoor Recreation Planner	Recreation
Judy Perkins, Ph.D.	Ecologist	Invasive Non-native Plants, Special Status Plants, Vegetation
Isaac Pittman	Range Management Specialist	Livestock Grazing Management
Sylvia Ringer	Wildlife Biologist	EA Project Lead, Migratory Birds, Special Status Species Fish and Wildlife, Aquatic and Terrestrial Wildlife

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**APPENDIX A**

**SUPPORTING INFORMATION REGARDING RESTRICTIONS AND MITIGATION**

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**Table A-1. Site-Specific Considerations, Restrictions, and Mitigation Measures for Individual Treatment Projects**

<i>Habitat Issue</i>	<i>Site-Specific Considerations</i>	<i>Method Used</i>	<i>Restrictions and Mitigation Measures *</i>
<b>Invading Pinyon-Juniper</b>	<ul style="list-style-type: none"> <li>• Visual quality of stand</li> <li>• Size and spatial relationship of treated stand to other habitats</li> <li>• Quality of shrub and herbaceous understory</li> <li>• Presence of invasive weeds</li> <li>• Potential for rare plants</li> <li>• Potential for use by raptors</li> <li>• Potential for PJ-obligate songbirds</li> <li>• Proximity to a stream</li> <li>• Proximity to a road, residence, or well pad</li> </ul>	Hydro-axe	<ul style="list-style-type: none"> <li>• Conduct pre-treatment cultural resource survey and avoid impacts to cultural resources</li> <li>• Do not remove trees greater than 6 inches dbh</li> <li>• Do not use if active raptor nest within 0.25 mile</li> <li>• Do not use May 1 to Jul 1 (songbird nesting) *</li> <li>• Do not use Dec 1 to Apr 30 (deer/elk winter range, hunting) *</li> <li>• Do not use Nov 1 to Mar 31 (mountain lion hunting) *</li> <li>• Do not use on steep slopes</li> <li>• Do not use when soils are wet</li> <li>• Do not use within 100 feet of a stream</li> <li>• Do not use in riparian habitat (except tamarisk, Russian-olive)</li> <li>• Do not use in habitat for special status plants</li> <li>• Conduct weed treatments as necessary (see IWM Plan, BLM 2009a)</li> </ul>
		Chainsaw (manual)	<ul style="list-style-type: none"> <li>• Do not remove trees greater than 6 inches dbh</li> <li>• Do not use May 1 to Jul 1 (songbird nesting) *</li> <li>• Do not use Dec 1 to Apr 30 (deer/elk winter range, hunting) *</li> <li>• Do not use Nov 1 to Mar 31 (mountain lion hunting) *</li> <li>• Do not use within 100 feet of a stream</li> <li>• Do not use in riparian habitat (except tamarisk, Russian-olive)</li> <li>• Conduct weed treatments as necessary (see IWM Plan, BLM 2009a)</li> </ul>
<b>Dense Oakbrush</b>	<ul style="list-style-type: none"> <li>• Visual quality of stand</li> <li>• Size and spatial relationship of treated stand to other habitats</li> <li>• Slope steepness</li> <li>• Height and density of oaks</li> <li>• Quality of herbaceous understory</li> <li>• Presence of invasive weeds</li> <li>• Potential for rare plants</li> <li>• Potential for oak-obligate songbirds</li> <li>• Potential impacts on wild turkeys</li> <li>• Proximity to a stream</li> <li>• Proximity to a road, residence, or well pad</li> </ul>	Hydro-axe	<p>Same as for use of hydro-axe with invading pinyon-juniper except add the following:</p> <ul style="list-style-type: none"> <li>• Do not remove tree-type oaks greater than 15 feet in height</li> </ul>
		Chainsaw (manual)	<p>Same as for use of a chainsaw with invading pinyon-juniper except add the following:</p> <ul style="list-style-type: none"> <li>• Do not remove tree-type oaks greater than 15 feet in height</li> </ul>

**Table A-1. Site-Specific Considerations, Restrictions, and Mitigation Measures for Individual Treatment Projects**

<i>Habitat Issue</i>	<i>Site-Specific Considerations</i>	<i>Method Used</i>	<i>Restrictions and Mitigation Measures *</i>
<b>Decadent Sagebrush</b>	<ul style="list-style-type: none"> <li>• Visual quality of stand</li> <li>• Size and spatial relationship to treated stand to other habitats</li> <li>• Slope steepness</li> <li>• Height and density of sagebrush</li> <li>• Foliage and flower/seed production of sagebrush</li> <li>• Quality of herbaceous understory</li> <li>• Presence of invasive weeds</li> <li>• Potential for rare plants</li> <li>• Potential for sagebrush-obligate songbirds</li> <li>• Proximity to a stream</li> <li>• Proximity to a road, residence, or well pad</li> </ul>	Roller-chopping	<ul style="list-style-type: none"> <li>• Conduct pre-treatment cultural resource survey and avoid impacts to cultural resources</li> <li>• Do not use if active raptor nest within 0.25 mile</li> <li>• Do not use May 1 to Jul 1 (songbird nesting) *</li> <li>• Do not use Dec 1 to Apr 30 (deer/elk winter range, hunting) *</li> <li>• Do not use Nov 1 to Mar 31 (mountain lion hunting) *</li> <li>• Do not use on steep slopes</li> <li>• Do not use when soils are wet</li> <li>• Do not use within 100 feet of a stream</li> <li>• Do not use in riparian habitat (except tamarisk, Russian-olive)</li> <li>• Do not use when sustained winds exceed 30 mph</li> <li>• Conduct weed treatments as necessary (see IWM Plan, BLM 2009a)</li> </ul>
		Mowing	Same as for use of roller-chopping for decadent sagebrush
<b>Seeding of Disturbed or Degraded Herbaceous Layer</b>	<ul style="list-style-type: none"> <li>• Visual quality of stand</li> <li>• Size and spatial relationship to treated stand to other habitats</li> <li>• Slope steepness</li> <li>• Soil type and condition</li> <li>• Type and canopy cover of existing herbaceous vegetation</li> <li>• Presence of invasive weeds</li> <li>• Potential for new weed infestations</li> <li>• Potential for rare plants</li> <li>• Impediments to revegetation success</li> <li>• Potential for ground-nesting songbirds</li> <li>• Proximity to a stream</li> </ul>	Broadcast-seeding or Drill-seeding	<ul style="list-style-type: none"> <li>• Conduct pre-treatment cultural resource survey and avoid impacts to cultural resources</li> <li>• Do not use May 1 to Jul 1 (songbird nesting) *</li> <li>• Do not use Dec 1 to Apr 30 (deer/elk winter range) *</li> <li>• Do not use when soils are wet</li> <li>• Do not use within 100 feet of a stream</li> <li>• Do not use in riparian habitat (except tamarisk, Russian-olive)</li> <li>• Do not use when sustained winds exceed 30 mph</li> <li>• Seed only native perennial grasses; may include native perennial forbs and shrubs as indicated by site conditions</li> <li>• Use only hand seeding and hydroseeding on steep slopes</li> <li>• Monitor for effectiveness</li> <li>• Conduct weed treatments as necessary (see IWM Plan, BLM 2009a)</li> <li>• Conduct seeding in conjunction with CRVFO standard revegetation protocol</li> </ul>

\* Exceptions to seasonal restrictions may be excepted based on site-specific conditions or consultation with CPW and potentially affected parties (e.g., hunting guides).

<b>Table A-2. Mitigation Measures for Use of Chemical Herbicides in Conjunction under the GSFO Integrated Weed Management Plan (BLM 2009a).</b>	
<i>Resource</i>	<i>Mitigation Measures</i>
<b>Air Quality</b>	None proposed.
<b>Soil Resources</b>	None proposed.
<b>Water Resources and Quality</b>	<ul style="list-style-type: none"> <li>Establish appropriate (herbicide-specific) buffer zones to downstream water bodies, habitats, and species/populations of interest (Appendix C).</li> </ul>
<b>Wetland and Riparian Areas</b>	<ul style="list-style-type: none"> <li>See mitigation for Water Resources and Quality and Vegetation.</li> </ul>
<b>Vegetation</b>	<ul style="list-style-type: none"> <li>Minimize the use of terrestrial herbicides (especially bromacil, diuron, and sulfometuron methyl) in watersheds with downgradient ponds and streams if potential impacts to aquatic plants are of concern.</li> <li>Establish appropriate (herbicide specific) buffer zones around downstream water bodies, habitats, and species/populations of interest. Consult the ERAs for more specific information on appropriate buffer distances under different soil, moisture, vegetation, and application scenarios.</li> <li>To protect special status plant species, implement all conservation measures for plants presented in the <i>Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment</i>.</li> </ul>
<b>Fish and Other Aquatic Organisms</b>	<ul style="list-style-type: none"> <li>Limit the use of diquat in water bodies that have native fish and aquatic resources.</li> <li>Limit the use of terrestrial herbicides in watersheds with characteristics suitable for potential surface runoff, and have fish-bearing streams, during periods when fish are in life stages most sensitive to the herbicide(s) used.</li> <li>Implement all conservation measures for aquatic animals presented in the <i>Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment</i>.</li> <li>Establish appropriate herbicide-specific buffer zones for water bodies, habitats, or fish or other aquatic species of interest (see Appendix C and recommendations in individual ERAs).</li> <li>Avoid using the adjuvant R-11® in aquatic environments and either avoid using glyphosate formulations containing the surfactant POEA or seek to use formulations with the least amount of POEA to reduce risks to aquatic organisms.</li> </ul>
<b>Wildlife</b>	<ul style="list-style-type: none"> <li>To minimize risks to terrestrial wildlife, do not exceed the typical application rate for applications of dicamba, diuron, glyphosate, hexazinone, tebuthiuron, or triclopyr, where feasible.</li> <li>Minimize the size of application areas, where practical, when applying 2,4-D, bromacil, diuron, and Overdrive® to limit impacts to wildlife, particularly through contamination of food items.</li> <li>Where practical, limit glyphosate and hexazinone to spot applications in rangeland and wildlife habitat areas to avoid contamination of wildlife food items.</li> <li>Avoid using the adjuvant R-11® in aquatic environments and either avoid using glyphosate formulations containing the surfactant POEA or seek to use formulations with the least amount of POEA to reduce risks to amphibians and aquatic organisms.</li> <li>Do not apply bromacil or diuron in rangelands, and use appropriate buffer zones (see Section 3.3) to limit contamination of offsite vegetation, which may serve as forage for wildlife.</li> </ul>

**Table A-2. Mitigation Measures for Use of Chemical Herbicides in Conjunction under the GSFO Integrated Weed Management Plan (BLM 2009a).**

<i>Resource</i>	<i>Mitigation Measures</i>
<b>Wildlife (continued)</b>	<ul style="list-style-type: none"> <li>• Do not aerially apply diquat directly to wetlands or riparian areas.</li> <li>• To protect special status species, implement all conservation measures for terrestrial animals presented in the <i>Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment</i>. Apply these measures to special status species (refer to conservation measures for a similar size and type of species and same trophic guild).</li> </ul>
<b>Livestock</b>	<ul style="list-style-type: none"> <li>• Minimize potential risks to livestock by applying diuron, glyphosate, hexazinone, tebuthiuron, and triclopyr at the typical application rate, where feasible.</li> <li>• Do not apply 2,4-D, bromacil, dicamba, diuron, Overdrive®, picloram, or triclopyr across large application areas, where feasible, to limit impacts to livestock, particularly through the contamination of food items.</li> <li>• Where feasible, limit glyphosate and hexazinone to spot applications in rangeland.</li> <li>• Do not aerially apply diquat directly to wetlands or riparian areas used by livestock.</li> <li>• Do not apply bromacil or diuron in rangelands, and use appropriate buffer zones (see Vegetation section in Chapter 4) to limit contamination of offsite rangeland vegetation.</li> </ul>
<b>Cultural Resources and Native American Religious Concerns</b>	<ul style="list-style-type: none"> <li>• Do not exceed the typical application rate when applying 2,4-D, bromacil, diquat, diuron, fluridone, hexazinone, tebuthiuron, and triclopyr in traditional use areas.</li> <li>• Avoid applying bromacil or tebuthiuron aerially in known traditional use areas.</li> <li>• Limit diquat applications to areas away from high residential and traditional use areas to reduce risks to Native Americans.</li> <li>• A cultural resource inventory shall be conducted and Historic properties will be identified and protected prior to any direct or indirect impact by weed treatments on a project-by-project basis. Consultation with the SHPO, tribes, and other consulting parties will be conducted in accordance to the legal requirements of Section 106 of the NHPA as implemented through the Colorado State protocol.</li> </ul>
<b>Visual Resources</b>	None proposed.
<b>Wilderness and Other Special Areas</b>	<ul style="list-style-type: none"> <li>• Mitigation measures that may apply to wilderness and other special area resources are associated with human and ecological health and recreation. Refer to the Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, Recreation, and Human Health and Safety sections.</li> </ul>
<b>Recreation</b>	<ul style="list-style-type: none"> <li>• Mitigation measures that may apply to recreational resources are associated with human and ecological health. Refer to the Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, and Human Health and Safety sections.</li> <li>• Avoid aerial applications of bromacil, diuron, and tebuthiuron in areas likely to receive backcountry use during or within 1 week after spraying.</li> </ul>
<b>Social and Economic Values</b>	None proposed.
<b>Human Health and Safety</b>	<ul style="list-style-type: none"> <li>• Avoid the maximum application rate when using 2,4-D, bromacil, diquat, diuron, fluridone, hexazinone, tebuthiuron, and triclopyr.</li> <li>• Avoid applying bromacil or diuron aerially.</li> <li>• Evaluate the need to use diuron on a case-by-case basis due to moderate or high risks to workers with all application methods.</li> <li>• Avoid applying chlorsulfuron at the maximum application rate when using a broadcast ground spray.</li> <li>• Avoid applying diquat using the horseback or backpack methods.</li> <li>• Avoid applying diquat near residential or subsistence food-gathering areas.</li> <li>• Avoid applying hexazinone using an over-the-shoulder broadcast applicator.</li> </ul>

**APPENDIX B**  
**PUBLIC COMMENTS AND BLM RESPONSES**

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## **APPENDIX B. PUBLIC COMMENTS AND BLM RESPONSES**

The Proposed Action for the programmatic Environmental Assessment for the Wildlife Habitat Mitigation Plan as mitigation for impacts of oil and gas activities on deer and elk winter range was made available for public review and comment by posting on the CRVFO website, mailing a notice to interested parties by regular mail, and publishing a notice in two local newspapers. Three comment letters were received.

Comments or synopses of comments from each commenting entity and BLM responses are presented below. The letters in their entirety are provided at the back of this appendix.

### **Wilderness Workshop – Letter from Peter Hart, Conservation Analyst/Staff Attorney, and Will Roush, Conservation Advocate, dated February 27, 2012**

**Comment:** *It is essential that BLM begin contemplating the significant impacts ongoing oil and gas development has had and continues to have on wildlife and wildlife habitat. This analysis is long overdue but we applaud the BLM for finally undertaking it.*

**Recommendation:** *First BLM must undertake to quantify existing development and the impacts that existing development has already had on wildlife and wildlife habitat.*

**Response:** Thank you for your comments. We disagree with the assertion that BLM has not contemplated impacts of oil and gas activities—on the contrary, it is a major focus of staff time and effort—but appreciate that Wilderness Workshop (WW) support for the programmatic Wildlife Habitat Mitigation Plan (WHMP). Moreover, we disagree that the recommended action is a necessary precursor for implementing the WHMP, which will help guide selection and application of specific types of habitat treatments to future oil and gas activities. A quantification of past impacts is irrelevant to the purpose of the WHMP. However, the BLM does conduct a cumulative impacts analysis in conjunction with NEPA documentation for oil and gas activities and other resource management decisions.

**Comment:** *Tiering to the 1999 Glenwood Springs Resource Area (GSRA) Oil & Gas Leasing & Development Final Supplemental Environmental Impact Statement (FSEIS) is inappropriate. [T]he usefulness of predictions, assumptions, and analysis in the 1999 GSRA Oil and Gas Development FSEIS are stale and outdated. That document did not contemplate the levels of development that currently exist on the field office. Consequently it is inappropriate for the BLM to tier any new oil and gas related activities to that analysis. This is true for ongoing development and it is true for mitigation of existing and ongoing development. **Recommendation:** Before moving forward with mitigation measures, BLM must accurately quantify the extent and impacts associated with current development on both public and private lands in the planning area. The 1999 FSEIS did not consider the extent of development that currently exists, nor has the BLM adequately undertaken to disclose and analyze impacts of current development.*

**Response:** The extent of existing oil and gas development has no bearing on the appropriateness of BLM's requiring and implementing habitat treatments as mitigation for individual oil and gas developments authorized by the BLM. All of the habitat treatments required and approved by the BLM as mitigation for oil and gas projects are designed, planned, and implemented in collaboration with Colorado Parks and Wildlife (CPW) to ensure that that agency—the one responsible for management of wildlife in Colorado—agrees with the need for and efficacy of the treatments employed for specific oil and gas projects and in specific treatment areas.

**Comment:** *BLM must consider actions that go beyond mitigation. Mitigation is a net loss. It means simply that actions will be taken to reduce impacts, but it does not mean that impacts will be prevented. Depending on what an updated impact analysis shows, BLM may find that mitigation of ongoing development will not sufficiently protect wildlife and wildlife habitat. BLM may find that impacts to wildlife are so significant that they will require protection of swaths of wildlife and habitat rather than mitigation. BLM must consider the creation of wildlife corridors, core habitat protection areas and buffer zones, which are often the most effective means of mitigating the impacts of development. This will require precluding certain lands from development and surface occupancy. Recommendation: BLM must consider whether... preventative or protective measures, rather than mitigative measures, are necessary to protect wildlife. The agency must consider, for example, phased leasing and development that would protect swaths of wildlife habitat from development until developed areas are restored to effective condition. BLM must also consider prohibiting development in sensitive wildlife habitat.*

**Response:** The BLM routinely and regularly considers actions that go beyond mitigation, including phased and clustered development and protection of portions of leases to preclude, limit, or constrain development in some portions of the lease. Habitat treatments, as analyzed and disclosed in the Environmental Assessment for the programmatic WHMP, are specifically to help offset unavoidable direct and indirect impacts of development by providing long-term improvements in the quantity and quality of habitat available for wildlife, including the same big game (deer and elk) populations as potentially adversely affected by an oil and gas project. The treatments are typically in addition to measures to avoid or minimize adverse impacts.

**Comment:** *BLM must consider the impacts proposed treatments may have on manipulated habitat. If we read the scoping notice correctly, it seems like BLM is planning to convert habitat types to compensate for oil and gas disturbance. Recommendation: The BLM must analyze the impacts of habitat conversion on the manipulated habitat, as well as impacts on wildlife that will benefit from the conversion. If the agency intends to alter ecotypes, converting nongame habitat to big game habitat, for example, it will need to analyze the impacts to all species which depend upon the manipulated habitat.*

**Response:** “Habitat conversion” is not a component of the habitat treatments analyzed and disclosed in the programmatic EA for the WHMP. Instead, the treatments would seek to restore certain types of native plant communities to the conditions that undoubtedly occurred historically but have been altered due to, for example, changes in the fire regime and protracted use by domestic livestock. The treatments applied in specific areas may include removing young pinyon pine and juniper trees that have begun to encroach into sagebrush habitats, mowing or roller-chopping decadent (old-age) sagebrush stands to restore shrub vigor and correct excessive density resulting from grazing, thinning decadent and over-mature oakbrush stands to improve production of forage by the shrubs and the herbaceous understory, and, in combination with some or all of the above, as appropriate, seeding the herbaceous stratum with desirable native grass and, potentially, forb species to help suppress weeds and improve forage. These are widely used, readily available technologies.

The BLM recognizes that habitat benefits for one species group may cause habitat detriments to other species groups. However, because the treatments focus on returning habitats to a more natural and productive condition, the BLM has concluded that minor, localized impacts to nongame species are less consequential than long-term benefits to deer and elk.

**Comment:** *Proposed treatments should involve proven methods. Mitigation measures in other states and in similar ecosystems to the CRVFO have cost taxpayers and companies millions of dollars and resulted in no quantifiable increase in wildlife populations. Recommendation: To the extent that this EA relies on mitigation to offset disturbance, the BLM must demonstrate that methods have a scientifically proven*

*track record with actual benefits of proposed mitigation techniques. Additionally BLM should institute a monitoring program to track whether techniques are yielding measurable benefits to wildlife species and either adjust mitigation efforts or reduce development accordingly.*

***Response:*** The treatment methods analyzed are widely used and endorsed by CPW and other big-game-related entities. The impacts associated with oil and gas activities and the benefits of accompanying mitigation are difficult to quantify and document, particularly in light of the myriad other potential influences on big game and their habitat. However, just as it is reasonable to assume that human activity associated with oil and gas development would have some adverse impacts on use by deer and elk (and other species) in proximity to the disturbance, it is reasonable to assume that improving the quantity and quality of habitat available to those populations would have some benefits tending to offset, in whole or in part, the adverse impacts.

We do not believe that formal monitoring of changes in big game or other wildlife use is warranted, but we do monitor treated areas for weed infestations and, when seeding is employed, the progress of seed germination and establishment. We also conduct informal monitoring of the type and degree of wildlife use of treated areas.

***Comment:*** *BLM should contemplate use of prescribed fire. Recommendation: BLM should analyze use of prescribed fire to restore habitat and to recreate natural disturbance processes. This is a technique that may help restore sage habitat and reverse trends like pinyon-juniper encroachment.*

***Response:*** While the BLM uses prescribed fires for various habitat-related purposes, we have concluded that the type of winter range habitats and treatments anticipated by the WHMP are more appropriate given the dominance by sagebrush, the potential for invasion by cheatgrass, and the proximity of many candidate areas to private property. If a situation were identified in which use of prescribed fire would be beneficial it would be conducted under our Fire Management Plan and with a project-specific NEPA analysis and not pursuant to the programmatic EA for the WHMP.

***Comment:*** *BLM should look for ways to restore natural disturbance regimes. Mimicking natural disturbance through mechanical or manual treatments can be effective, however it always includes collateral damage such as soil compaction, introduction of weeds and exotic species, removal of biomass and nutrients, and a lengthier disturbance time for the habitat being manipulated. Allowing natural process to create a mosaic of disturbances is more effective, less damaging to the ecosystem, and more cost effective.*

*Allowing natural disturbance regimes, such as fire, to occur may include off site measures such as working with private property owners or lease holders to create defensible space around infrastructure and property. Follow-up treatments such as re-seeding with native vegetation should also be considered.*

***Recommendation:*** *BLM should look for ways to restore ecosystem health by taking steps to ensure that natural disturbance regimes can occur. Using mitigation measures to restore ecosystems that are outside of their historic range of variability may allow the agency to manage with natural disturbances, rather than mechanical treatment, moving forward. This would improve ecosystem health and, likely, reduce management costs.*

***Response:*** We generally agree with the points in the comment regarding the desirability of restoring natural disturbance regimes, although such is not always practicable in a mosaic with private lands and in a Wildland-Urban Interface such as the CRVFO area. However, the goals espoused in the comment, while worthy in some situations, are beyond the more focused scope of the WHMP, which is to mitigate for project-specific impacts through project-specific habitat treatments.

**Comment:** Impacts associated with proposed mitigation measures must be fully discussed. There must be thorough discussion and analysis of the impacts associated with proposed treatments, especially the mechanical treatments. For example, BLM must analyze and disclose: how much soil will be disturbed? What are the impacts of removing biomass (and as a result nutrients) from sites? What is the collateral impact on non-target species (plants and animals) from proposed treatments and treatment techniques? Are proposed mitigation measures more impactful during certain times of the year? **Recommendation:** BLM should fully analyze several types of treatments to improve habitat. These must include measures to let natural disturbance regimes occur on the landscape and the creation of corridors, core habitat protection areas, and buffer zones. This analysis (rather than cost or expediency) coupled with ongoing monitoring of the effectiveness of treatments should inform where, when and what types of mitigation should be undertaken.

**Response:** The programmatic EA for the WHMP analyzes and discloses, at a level deemed reasonable and appropriate by the CRVFO, the types of impacts—positive and negative—associated with the habitat types and treatment types anticipated.

**Trout Unlimited – Email from Robert Meulengracht, Colorado SFRED Coordinator, and Cathy Purves, Science and Technical Advisor, dated February 24, 2012**

**Comment:** The Plan does not provide a comprehensive range of management actions. Despite the statement in the Proposed Action of the EA that the Plan is to provide a comprehensive range of management actions, the Plan only provides a description of three habitat types within the resource area and proceeds to describe the two types of removal treatment that will be implemented as the presumed mitigation component (presented on pages 3-5 of the EA). This limited and narrowly focused element of the Plan fails to provide any science-based reasoning for why these two methods are the only mitigation options and fails to address what species would benefit from these actions. Further, it concentrates entirely on big game rather than using an ecosystem or indicator species approach, which is the management options many resource managers are now implementing in oil and gas resource areas.

- Implement the CHAT (Crucial Habitat Assessment Tool) application for the CRVFO. Combined with staff's expertise of the CRVFO resources, CHAT will supplement data gaps to create uniformity in identifying important wildlife corridors and crucial habitat. Designed as an organized and comprehensive approach to obtaining and implementing wildlife-related data and associated maps, its value lies within the ability for the BLM to access priority habitat areas through the use of combined mapping efforts and applying these mapping activities consistently across political and agency jurisdictions.
- Include a wider range of management options that contains an inventory of the resource vegetative conditions, including riparian, wetlands and streamside habitats.
- Highlight high value areas worthy of protection and avoidance from disturbance.
- Identify areas requiring remediation and identify a strategy for conducting standardized habitat condition assessments prior to any development activities.
- Create a Plan that includes annual updates of wildlife inventories and status.
- Broaden the species categories for mitigation to include indicator species and provide science-based documentation that promotes mitigation opportunities that enhance vegetation manipulation benefiting indicator species.

**Response:** Thank you for your comments. While the BLM recognize the merit of many of the goals embodied in TU's comment and list of recommendation, these are beyond the scope of the habitat treatment needs and methods for which purpose the proposed WHMP was developed. The WHMP is not intended as an area-wide inventory or management strategy for the range of wildlife uses, habitat types, and management actions or resource development projects occurring or expected to occur within the CRVFO. Instead, it is intended only to analyze and disclose the types of adverse and beneficial impacts of readily identifiable, readily implementable habitat treatments associated with specific oil and gas projects. Treatments may be as small as several acres to offset impacts for a single well pad or as large as 100 acres or more for larger development projects. In either case, they are targeted at specific areas in proximity to the disturbance to ensure that the affected population is benefited as much as practicable. Treatments may also be required by the BLM, in collaboration with CPW, as mitigation for activities not involving direct habitat impacts, such as development during the big game winter range Timing Limitation.

Regarding the focus on big game winter range, direct and indirect habitat loss, modification, and fragmentation of deer and elk winter range has repeatedly been cited by CPW as one of their major concerns in relation to oil and gas development activities, which occur disproportionately on winter habitats and are cumulative with other impacts at lower elevation area related to agriculture, grazing use, and general industrial, commercial, and residential development. Therefore, the BLM believes that it is appropriate to focus these treatments on improving big game winter range.

**Comment:** *The Plan should include a fisheries and watershed mitigation component that better protects water quality and associated vegetation. [Extensive discussion provided relative to these topics. See attached letter.]*

- *Include how water quality and quantity issues (as it relates to oil and gas impacts on the watershed, fisheries, wildlife) will be mitigated. This may include stronger buffer or setback implementation, directional drilling access from greater distances to avoid sensitive plants or streamside vegetation, use of matt boards or ramps, etc.*
- *We recommend a .25 mile buffer setback on all current and potential Colorado River cutthroat trout habitat, all perennial streams, and additional buffers of 500 feet on intermittent streams to protect potential brood rearing areas.*
- *The significance of potential harms from oil and gas development activities to Colorado's waters cannot be underestimated. Road crossings and stream crossings must incorporate timing restrictions during spawning periods for all trout waters as mitigation components.*
- *Consideration for how remediation and mitigation efforts to prevent such contamination events should be a part of the Plan.*
- *Of particular importance is the impact to the watershed in light of the recent push for expanded use of hydraulic fracturing during oil and gas well development. In view of the numerous incidents of water and stream contamination and spill events which have occurred in recent years within the resource area, a more thorough and prescriptive analysis should be included in the Plan.*

**Response:** While the programmatic EA for the WHMP analyzes and discloses potential impacts of habitat treatments on water quality, fisheries, and riparian vegetation, it is not aimed at improving those habitat types or associated wildlife and human uses. For example, it has no relationship to Colorado River cutthroat trout except to the extent that habitat treatments in proximity to trout-bearing streams would be designed and implemented in a way to avoid adverse impacts to

We also note that many of TU's comments regarding the WHMP, and specifically the extensive comment associated with the synopsis above, are pertinent to the RMP process and large-scale, watershed- or landscape-based management but not, in our opinion, to individual, relatively small-scale projects such as envisioned by the WHMP on which TU is commenting.

**Comment:** *Vegetative removal should not be the only mitigation option in the Plan. While we support some of the vegetative treatments described in the Plan to enhance some of the plant vigor, we feel the Plan EA is narrowly focused on implementing mitigation opportunities that concentrate more on the removal of vegetation for big game species rather than seeking ways to further protect habitat. With the abundant and available new science-based data on vegetative treatments and documented habitat impacts from oil and gas development, TU recommends that the CRVFO provide a wider range of mitigation techniques to supplement and enhance the Plan.*

- *Develop a broader Plan that incorporates habitat treatments and protections (such as the use of matt ramps, moisture capture containers, fabric treatments) of valuable habitat areas that don't necessarily remove habitat but keep it viable and in a functioning condition.*
- *Identify islands of prime habitat that will not be destroyed or removed and develop protection opportunities.*
- *Implement a local seed capture program for reseeding native and ecologically suited species.*
- *Provide a much stronger riparian and wetland protection mitigation component of the Plan.*
- *Protect mitigation areas in a type of "banking" concept which encourages new growth in old growth shrub stands, protects forb and grassland areas from livestock grazing, and sets aside future new important habitat areas.*
- *Remove all high value mitigated areas from future oil and gas leasing consideration.*

**Response:** Again, the BLM does not disagree with TU's comments regarding "vegetative" (vegetation) treatments. Moreover, many of the recommendations for impact avoidance and mitigation included in TU's recommendations are incorporated into our planning for oil and gas projects. However, most of the measures are beyond the more limited scale of the treatments envisioned by the programmatic WHMP.

**Comment:** *The Plan should not be tiered to an outdated Oil and Gas EIS and Resource Management Plan. Much has changed in the CRVFO since the analysis conducted in the 1999 FSEIS. Changes include new technologies used to access energy resources, larger well pads used in development and production, new water concerns, new fish and wildlife impacts, new air quality impacts and new vegetative impacts. Stipulations on leases may be dated, inadequate or non-existence for ecological variables that are now important considerations.*

- *In developing a comprehensive Plan, make sure it is incorporated into the new oil and gas leasing reform format of the BLM's Instruction Memorandum (IM) 2010-117. For future leasing decisions on proposed lease parcels, the Plan will be a valuable tool in evaluating proposed lease areas.*
- *The Plan should include reference to the Colorado BLM's Oil and Gas Leasing Reform Implementation Strategy (March 2011) which establishes the updated process to ensure better protection decisions for leasing areas in BLM's resource areas.*
- *Include an assessment in the Plan that takes into account the Consistency Review currently underway within the Colorado BLM office.*
- *Tier this Plan to the new CRV RMP currently under revision.*

- *Incorporate the latest Conservation Effects Assessment Project (CEAP; December 2011) initiated by the Natural Resources Conservation Service (NRCS) and develop partnerships that enable the broader ability to assess effects of these mitigation practices on environmental quality at landscape levels, including watershed scales.*

**Response:** The extent of oil and gas development has no bearing on the appropriateness of BLM's requiring and implementing habitat treatments as mitigation for individual oil and gas developments authorized by the BLM. All of the habitat treatments required and approved by the BLM as mitigation for oil and gas projects are designed, planned, and implemented in collaboration with Colorado Parks and Wildlife (CPW) to ensure that that agency—the one responsible for management of wildlife in Colorado—agrees with the need for and efficacy of the treatments employed for specific oil and gas projects and in specific treatment areas.

As for the specific recommendations, we reiterate that the scale of the projects and treatments implicit in TU's list are much larger than the more focused, readily identifiable, readily implementable habitat treatment needs and methods being required, and expected to continue to be required, by the BLM in conjunction with project-specific oil and gas activities.

**Comment:** *The Plan should limit exemptions to timing limitations in order to better protection wildlife populations. The EA must consider the current status of big game habitat in the CRVFO and whether effective timing restrictions are doing a sufficient job. The impacts of oil and gas development on critical winter range to deer and elk are two-fold: 1) Stress and/or displacement cause by human disturbance such as noise and human presence, and 2) Direct and indirect loss of habitat and habitat use from well pads and roads. The loss of habitat due to surface disturbance compromises the capacity of the range to support deer and elk. The BLM has acknowledged this fact in previous planning efforts, such as the Rawlins RMP (2010), for which the FEIS states:*

*Restricting surface disturbing and other disruptive activities within crucial winter range during the winter months would reduce the stress to big game during these critical times. However, loss or alteration of this habitat outside these periods would not be restricted. This prohibits disturbance to the big game during critical time periods but affords no protection to the habitat. (p. 4-470).*

*Additionally, a 2011 review of typical federal agencies' management actions shows that when agencies are considering energy development projects, protections for mule deer are not consistently applied or managed. Seasonal restrictions are often waived when relief is requested from energy companies, further weakening the effectiveness of timing limitations. [Extensive additional discussion on topic of TLs included in comment – see attached letter.]*

- TU recommends an updated review of the adequacy of the CRV stipulations on big game critical winter range based on the significant amount of development that has occurred since the 1999 Oil and Gas Leasing ROD.
- Implement NSO areas in the Plan that will remain protected during the life of the oil and gas project.
- Protect important migration corridors as a mitigation component.
- Implement annual monitoring and assessments among agencies which will provide valuable answers to future mitigation actions.

**Response:** Whether to grant a big game winter range TL exception is not the subject of the proposed WHMP, although habitat treatments are sometimes required by the CRVFO as mitigation sufficient to

approve such a request. These determinations are made in collaboration with CPW regarding the appropriateness and sufficiency of the proposed mitigation.

Regarding the reference to annual reports by Sawyer et al. summarizing their studies of winter deer distribution and abundance in the Pinedale Anticline Project Area (PAPA), we recommend that TU read the 2006 report more closely and review the subsequent year's report (2007). Doing so will reveal problems with the experimental design and some results at odds with the widely cited 46% decline. For example, decreases in density were identical in the treatment (drilling) and reference (no drilling) areas, overwinter survival of adults and fawns was higher in the drilling area, and deer populations in the drilling area increased over the last half of the study despite continually increasing development intensity. The last finding prompted the authors to consider the possibility of habituation. Note also that the average distance of wintertime displacement of deer from oil and gas facilities, while large at first (not surprisingly, since this was a novel situation for them), returned to pre-drilling levels a few years into the study, again suggesting some habituation and casting doubt on the strength of the cause-and-effect relationship with drilling versus other factors. Indeed, the drilling and no-drilling areas showed nearly identical population trends through the years, except for the predictable larger decline in the treatment area shortly after drilling began, but apparently reflecting a change in distribution of many animals to outside the census area rather than an actual decrease in herd size. Last, note the general lack of statistically significant differences.

Moreover, while we admire the landmark work of Sawyer et al. and believe that their annual monitoring reports and other reports contain much valuable information for biologists and land managers, we do not believe that their findings are as relevant to the CRVFO area as TU apparently does. Comparing the PAPA study area to the CRVFO oil and gas development area highlights very different ecological settings in terms of topographic and vegetational screening, extent of seasonal migration (resident herds being more likely to show habituation than highly migratory herds), and exposure to deer and elk to other types of human activity in the more highly populated I-70 corridor (again suggesting that habituation is more likely here). Nonetheless, impacts of oil and gas projects on big game populations are an appropriate concern and the basis for habitat treatments and other mitigation measures required by the CRVFO.

In addition, the Sawyer et al. 2007 report discusses the benefit of use of pipelines rather than haul trucks to convey fluids—a measure applied in the CRVFO area with increasing frequency and now a common approach for fluids movement among our major operators.

Last, we do not believe that the results of the Sawyer et al. studies, however they are interpreted, bear on the Proposed Action analyzed in the programmatic EA for the WHMP—i.e., the long-term benefits to wintering big game from implementing certain types mechanical and manual habitat treatments to help offset relative avoidance of active development areas to help improve habitats degraded by prolonged grazing of livestock and changes to the natural fire regime.

**Comment:** *The Plan must include a monitoring and evaluation component. As we have earlier mentioned, TU commends the CRVFO for getting ahead of the oil and gas leasing and development rush by implementing the WHMP for oil and gas exploration and development. In order to have assurances that true mitigation adequacy will be implemented we suggest the following steps to making sure the Plan guides the success both on a landscape size and on a case-by-case project size.*

- *Set management goals for what conservation mitigation might include in the CRVFO, both from a habitat management scenario and a fish and wildlife species scenario.*
- *Implement specific actions that, once identified, which will provide both long-term and short-term results.*

- *Monitor and analyze the results making sure that the information is used wisely in response to the science presented.*
- *Revise any mitigation management goals, objectives, or monitoring regimes that may be required, and once again, continue monitoring and implementing necessary changes.*
- *Share the learning experience with all respective agencies involved in fish and wildlife management.*
- *Identify key species that may be good monitoring sirens for future problems and design specific objectives for these species.*

***Response:*** We do not believe that formal monitoring of changes in big game or other wildlife use is warranted, but we do monitor treated areas for weed infestations and, when seeding is employed, the progress of seed germination and establishment. We also conduct informal monitoring of the type and degree of wildlife use of treated areas.

We do not disagree with the suggestion for monitoring to help guide future use of these or potentially other treatment methods. However, we do not believe that a formal monitoring program is required. Because these are typical habitat issues in this region, and the treatments would use widely applied methods, it is reasonable to assume that improving the quantity and quality of habitat available to affected populations of wintering deer and elk would have some benefits tending to offset, in whole or in part, the adverse impacts.

***Comment:*** *Conservation management and mitigation in landscapes that contain increasing oil and gas development continues to challenge us all. TU advocates for responsible energy development that promotes both the opportunity for industry to access energy resources in an accountable approach and for fish and wildlife populations to continue to exist and thrive on our public lands. We stress the need for the CRVFO to move away from a mitigation plan that is designed for handling only damage control rather than proactive management opportunities. Protecting high value fish and wildlife areas through the implementation of a good RMP and Master Development Plan from industry also means having a strong and useable mitigation plan.*

*Accountability to our conservation heritage should be shared by all. We offer these suggestions and recommendations in good faith and would like to participate in any opportunities that help move this Plan forward.*

***Response:*** Thank you for your interest in this project and your commitment to working toward protection of our wildlife and other natural resources.

**Bill Barrett Corporation – Letter from Doug Dennison, Environmental/Government Affairs Liaison, dated February 24, 2012.**

***Comment:*** *BBC suggests that BLM consider expanding the scope of the plan to include other treatment types such as installing water features or providing nesting habitat for birds.*

***Response:*** Thank you for your comments. BLM considered whether to include those and other potential measures but concluded that they involved a higher degree of uncertainty regarding why, where, when, and how they would be provided, and the positive and negative impacts on target species and other wildlife, than appropriate for the proposed WHMP. They will continue to be considered, and may be required as mitigation, in conjunction with EAs prepared for specific oil and gas projects.

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February 27, 2012

U.S. Department of the Interior  
Bureau of Land Management  
Colorado River Valley Field Office  
2300 River Frontage Road  
Silt, Colorado 81652  
Via email: [BLM\\_CO\\_SI\\_CRVFO\\_Webmail@blm.gov](mailto:BLM_CO_SI_CRVFO_Webmail@blm.gov)

RE: Programmatic Environmental Assessment of Proposed Wildlife Habitat Mitigation Plan for Oil and Gas Exploration and Development - DOI-BLM-CO-N040-2012-0034-EA

Dear Land Manager,

Please accept these scoping comments on behalf of Wilderness Workshop.

1. It is essential that BLM begin contemplating the significant impacts ongoing oil and gas development has had and continues to have on wildlife and wildlife habitat. This analysis is long overdue but we applaud the BLM for finally undertaking it.

**Recommendation:** First BLM must undertake to quantify existing development and the impacts that existing development has already had on wildlife and wildlife habitat.

2. Tiering to the 1999 Glenwood Springs Resource Area (GSRA) Oil & Gas Leasing & Development Final Supplemental Environmental Impact Statement (FSEIS) is inappropriate.

CEQ regulations make clear that tiering can be used only when a project is “included within the entire program or policy” addressed by the broader EIS. 43 C.F.R. § 1502.20. Federal case law has further established that tiering is appropriate only “[i]f an action is a component of a larger project” or “where a broad EIS has already been prepared and the agency is now considering specific aspects of a proposal.” Sierra Club v. U.S. Army Corps of Engineers, 295 F.3d 1209, 1215 (11th Cir. 2002); see also Friends of the Bow v.

Thompson, 124 F.3d 1210, 1214 (10th Cir. 1997); Nevada v. Department of Energy, 457 F.3d 78, 91 (D.C. Cir. 2006) (“Tiering refers to a procedure by which an agency prepares a broad EIS – called a programmatic EIS – and subsequently prepares a narrower analysis – called a site-specific EIS – of an action included in the program.”) (emphasis added); Colorado Environmental Coalition v. Bureau of Land Management, 932 F.Supp. 1247, 1252 (D.Colo. 1996) (“Under NEPA regulations, tiering is a process in which environmental impacts addressed in a previous EIS may be briefly summarized and incorporated by reference in a subsequent document.”) (emphasis added).

In this case, the 1999 GSRA Oil & Gas Leasing & Development FSEIS did not anticipate existing levels of development. The RFD used to inform impact analysis in the 1999 FSEIS anticipated a total of 1200 federal and private wells in the planning area. *See* Glenwood Springs Resource Area, Oil and Gas Final SEIS (1999), at 4-2. That document anticipated only 230 wells drilled into the federal mineral estate in what is currently called the Colorado River Valley Field Office. *Id.* Another 70 wells were anticipated in the National Oil Shale Reserve (NOSR), now called the Roan Plateau Planning Area, over the course of the plan. *Id.*

The most recent RFD, prepared for the ongoing RMP revision, says “[a]s of September 2006, there are approximately 3,500 wells within the GSFO boundary.” GSRO RFD (2008), at 22. In fact, there are probably more than twice that many wells within the planning area. 2011 reports indicate that one operator alone owned interest in more than 3,923 producing wells in the Piceance.<sup>1</sup> According to a recent report from Garfield County, where oil and gas production overlaps almost entirely with the CRVFO<sup>2</sup>, there were 7,825 active oil and gas wells as of January 17, 2011.<sup>3</sup> That, of course, says nothing of the oil and gas wells developed in recent years in portions of Mesa County that overlap the CRVFO planning area.

All of this indicates that the usefulness of predictions, assumptions, and analysis in the 1999 GSRA Oil and Gas Development FSEIS are stale and outdated. That document did not contemplate the levels of development that currently exist on the field office. Consequently it is inappropriate for the BLM to tier any new oil and gas related activities to that analysis. This is true for ongoing development and it is true for mitigation of existing and ongoing development.

**Recommendation:** Before moving forward with mitigation measures, BLM must accurately quantify the extent and impacts associated with current development on both public and private lands in the planning area. The 1999 FSEIS did not consider the extent

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<sup>1</sup> Dennis Webb, *Williams drilling business to be called WPX Energy*, Grand Junction Daily Sentinel, Monday, May 16, 2011, available at [http://www.gjsentinel.com/news/articles/williams\\_drilling\\_business\\_to](http://www.gjsentinel.com/news/articles/williams_drilling_business_to).

<sup>2</sup> See RFD at 38: “Approximately 93% of the wells drilled within Garfield County are drilled with[in] the GSFO boundary.”

<sup>3</sup> Garfield County Oil and Gas Department, Garfield County, Colorado, “4<sup>th</sup> Quarter Report to BOCC,” January 17, 2010, available at <http://www.garfield-county.com/oil-gas/documents/2011-4th-Qtr-Report-to-BOCC.pdf>.

of development that currently exists, nor has the BLM adequately undertaken to disclose and analyze impacts of current development.

3. BLM must consider actions that go beyond mitigation.

Mitigation is a net loss. It means simply that actions will be taken to reduce impacts, but it does not mean that impacts will be prevented. Depending on what an updated impact analysis shows, BLM may find that mitigation of ongoing development will not sufficiently protect wildlife and wildlife habitat. BLM may find that impacts to wildlife are so significant that they will require protection of swaths of wildlife and habitat rather than mitigation. BLM must consider the creation of wildlife corridors, core habitat protection areas and buffer zones, which are often the most effective means of mitigating the impacts of development. This will require precluding certain lands from development and surface occupancy.

**Recommendation:** BLM must consider whether or not preventative or protective measures, rather than mitigative measures, are necessary to protect wildlife. The agency must consider, for example, phased leasing and development that would protect swaths of wildlife habitat from development until developed areas are restored to effective condition. BLM must also consider prohibiting development in sensitive wildlife habitat.

4. BLM must consider the impacts proposed treatments may have on manipulated habitat.

If we read the scoping notice correctly, it seems like BLM is planning to convert habitat types to compensate for oil and gas disturbance.

**Recommendation:** The BLM must analyze the impacts of habitat conversion on the manipulated habitat, as well as impacts on wildlife that will benefit from the conversion. If the agency intends to alter ecotypes, converting nongame habitat to big game habitat, for example, it will need to analyze the impacts to all species which depend upon the manipulated habitat.

5. Proposed treatments should involve proven methods.

Mitigation measures in other states and in similar ecosystems to the CRVFO have cost taxpayers and companies millions of dollars and resulted in no quantifiable increase in wildlife populations

**Recommendation:** To the extent that this EA relies on mitigation to offset disturbance, the BLM must demonstrate that methods have a scientifically proven track record with actual benefits of proposed mitigation techniques. Additionally BLM should instate a monitoring program to track whether techniques are yielding measurable benefits to wildlife species and either adjust mitigation efforts or reduce development accordingly.

6. BLM should contemplate use of prescribed fire.

**Recommendation:** BLM should analyze use of prescribed fire to restore habitat and to recreate natural disturbance processes. This is a technique that may help restore sage habitat and reverse trends like pinyon-juniper encroachment.

7. BLM should look for ways to restore natural disturbance regimes.

Mimicking natural disturbance through mechanical or manual treatments can be effective, however it always includes collateral damage such as soil compaction, introduction of weeds and exotic species, removal of biomass and nutrients, and a lengthier disturbance time for the habitat being manipulated. Allowing natural process to create a mosaic of disturbances is more effective, less damaging to the ecosystem, and more cost effective.

Allowing natural disturbance regimes, such as fire, to occur may include off site measures such as working with private property owners or lease holders to create defensible space around infrastructure and property. Follow-up treatments such as re-seeding with native vegetation should also be considered.

**Recommendation:** BLM should look for ways to restore ecosystem health by taking steps to ensure that natural disturbance regimes can occur. Using mitigation measures to restore ecosystems that are outside of their historic range of variability may allow the agency to manage with natural disturbances, rather than mechanical treatment, moving forward. This would improve ecosystem health and, likely, reduce management costs.

8. Impacts associated with proposed mitigation measures must be fully discussed.

There must be thorough discussion and analysis of the impacts associated with proposed treatments, especially the mechanical treatments. For example, BLM must analyze and disclose: how much soil will be disturbed? What are the impacts of removing biomass (and as a result nutrients) from sites? What is the collateral impact on non-target species (plants and animals) from proposed treatments and treatment techniques? Are proposed mitigation measures more impactful during certain times of the year?

**Recommendation:** BLM should fully analyze several types of treatments to improve habitat. These must include measures to let natural disturbance regimes occur on the landscape and the creation of corridors, core habitat protection areas, and buffer zones. This analysis (rather than cost or expediency) coupled with ongoing monitoring of the effectiveness of treatments should inform where, when and what types of mitigation should be undertaken.

Sincerely,

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**Sent via email to: [BLM\\_CO\\_SI\\_CRVFO\\_Webmail@blm.gov](mailto:BLM_CO_SI_CRVFO_Webmail@blm.gov)**

February 24, 2012

Silvia Ringer, Wildlife Biologist  
Colorado River Valley Field Office  
Bureau of Land Management  
2300 River Frontage Road  
Silt, CO 81652

**RE: Comments on the proposed Wildlife Habitat Mitigation Plan Programmatic Environmental Assessment**

Dear Ms. Ringer,

Please accept the following comments from Trout Unlimited on the Colorado River Valley Field Office's proposed Wildlife Habitat Mitigation Plan (Plan) Programmatic Environmental Assessment. Trout Unlimited (TU) offers these comments in an effort to continue to seek ways to cooperate and coordinate with public land management agencies in directing responsible energy development opportunities.

TU is a private, non-profit conservation organization that has more than 155,000 members nationwide dedicated to conserving, protecting and restoring North America's trout and salmon fisheries and their watersheds. Since 1959, TU has dedicated staff and volunteers toward the protection of sensitive ecological systems necessary to support robust native and wild trout and salmon populations in their respective range. TU recognizes that the value of public lands is unparalleled in providing habitat to coldwater fisheries, drinking water and wildlife habitat.

Statewide, Colorado TU has over 10,000 members and 22 local chapters, including a chapter in Eagle and Carbondale. These volunteer members actively utilize and enjoy the resources of the many rivers, lakes and watersheds located on Colorado's BLM lands. Attributes of these lands and watersheds include clean water, clean air, fishing, hunting, and wildlife viewing opportunities.

**General Overview**

We would like to commend the Colorado River Valley Field Office (CRVFO) for taking this progressive step in developing a wildlife mitigation plan to help streamline a process for implementing wildlife habitat improvement projects in a significant oil and gas resource area. Our public lands provide important high value habitat for many fish and wildlife species in addition to important recreation opportunities for Colorado's many outdoor recreationists. With an efficient and adaptive management strategy to assess and implement conservation practices, the CRVFO could well be in front of the pack in terms of heading off habitat impacts from oil and gas development.

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After reviewing the proposed Environmental Assessment (EA), we find the document lacking in providing a systematic, comprehensive, and accountable means for evaluating, monitoring, and adapting habitat improvement projects that could both benefit fish and wildlife within the CRVFO. The proposed Plan, appears extremely narrow in focus and relies on outdated planning documents and outdated science. The Plan provides a general habitat vegetation description followed by a discussion of methodologies used to initiate vegetative treatments. It lacks an ecosystem approach, any process for evaluating goals, a process for database accomplishment tracking, and a monitoring component that highlights the successes and failures of the mitigation implementation.

TU would respectfully suggest that the Plan be adjusted to create a document that can be implemented to allow a local project manager, a field office, and outside agency staff (like the Colorado Parks and Wildlife) gain a clear understanding of the resource habitat conditions within the resource area, recognize what may be required action to improve or mitigate an area or a population, and to observe the results of those mitigating actions.

From our perspective, implementing any type of mitigation plan is only as valuable as the extent to which the plan is applied and data synthesis is shared amongst agency staff and state wildlife management professionals. In other words, use a planning process similar to an adaptive management strategy; only make it a conservation strategy since there is an element of science and monitoring that is involved that ordinarily would not be implemented in an adaptive management strategy concept.

### **Specific Recommendations**

#### **1. The Plan does not provide a comprehensive range of management actions.**

Despite the statement in the Proposed Action of the EA that the Plan is to provide a comprehensive range of management actions, the Plan only provides a description of three habitat types within the resource area and proceeds to describe the two types of removal treatment that will be implemented as the presumed mitigation component (presented on pages 3-5 of the EA). This limited and narrowly focused element of the Plan fails to provide any science-based reasoning for why these two methods are the only mitigation options and fails to address what species would benefit from these actions. Further, it concentrates entirely on big game rather than using an ecosystem or indicator species approach, which is the management options many resource managers are now implementing in oil and gas resource areas.

We recommend the CRVFO include the following:

- ◆ Implement the CHAT (Crucial Habitat Assessment Tool) application for the CRVFO. Combined with staff's expertise of the CRVFO resources, CHAT will supplement data gaps to create uniformity in identifying important wildlife corridors and crucial habitat. Designed as an organized and comprehensive approach to obtaining and implementing wildlife-related data and associated maps, its value lies within the ability for the BLM to access priority habitat areas through the use of combined mapping efforts and applying these mapping activities consistently across political and agency jurisdictions.
- ◆ Include a wider range of management options that contains an inventory of the resource vegetative conditions, including riparian, wetlands and streamside habitats.
- ◆ Highlight high value areas worthy of protection and avoidance from disturbance.

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- ◆ Identify areas requiring remediation and identify a strategy for conducting standardized habitat condition assessments prior to any development activities.
  - ◆ Create a Plan that includes annual updates of wildlife inventories and status.
  - ◆ Broaden the species categories for mitigation to include indicator species and provide science-based documentation that promotes mitigation opportunities that enhance vegetation manipulation benefiting indicator species.

**2. The Plan should include a fisheries and watershed mitigation component that better protects water quality and associated vegetation.**

The Plan leaves out any discussion on how other habitat areas (other than upland vegetation) will be mitigated in the CRVFO resource area. There are eleven streams that contain conservation populations of Colorado River cutthroat trout (CRCT). Given the high level of oil and gas development along with other factors affecting water quality and quantity, TU remains particularly concerned with the management and mitigation efforts for these streams and the overall watershed condition. All of these populations are isolated from one another and without implementing stringent protection measures, any single damaging event could exterminate any one of these populations. TU believes that these high value water bodies deserve full protective measures from oil and gas development, should be identified and mapped, and be assigned strict stipulations that include strong buffers, NSO language, and annual defined water quality monitoring.

CRCT remain the most sensitive of the cutthroat subspecies to impacts resulting from energy development, based on energy development activities that increase surface sedimentation runoff and industrial waste contamination. As an example, in the 1970's an entire pure conservation population of CRCT was lost due to an oil spill in a tributary of LaBarge Creek in western Wyoming (Wyoming Game and Fish Department [WGFD] internal report, Binns, A.) That particular population never recovered and not until recent efforts by the forest service, WGFD, TU and others have CRCT been reintroduced into that system (WGFD 2010). Avoiding catastrophic damages such as that which occurred on LaBarge Creek means implementing strong protection tools.

Riparian and stream setbacks, or buffers, must be expanded to provide better protection from accidents and spills. Current stipulation proposals in the 1999 FSEIS are inadequate and insufficient to protect the fisheries and riparian components should a spill occur. And there exists many 1,000's of incidents of spills and leaks in Colorado from the energy industry over the years (Colorado Oil and Gas Conservation Commission website). Strong buffers provide significant protective results. Any other buffer size, such as 50 or 100 foot buffer, from a multi-well pad oil and gas rig will offer little protection. Instead, we recommend one-quarter mile buffer for all perennial waters, similar to that which the Little Snake River FO has implemented (October 2011).

It is TU's assertion, supported by science, that the larger a buffer area, the better the protection measures are for the resource. Oil and gas activities involve extreme disturbances to surface and subsurface lands. A mere 500-foot buffer to a cutthroat trout fishery or a gold medal fishery for a 4-5 acre well pad with facilities and equipment that contain toxic and hazardous chemicals is insufficient protection. We are advocating for strong buffer stipulation requirements in the Plan, reasoning that it is easier to modify larger buffer protections to lesser buffer protections through negotiated conditional use approvals and agreements, science-backed exemptions, and increased monitoring than start with less than a adequate coverage to work with.

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Potential impacts to surface and groundwater sources include increased sedimentation, turbidity of surface water, erosion, wetland loss, effects on water quality from contamination with drilling fluids, petroleum leaks, hydraulic fracturing chemicals, other industrial chemicals used during drilling practices, and the disruption of historic and normal flow patterns of surface water due to the increased number of roads, well pads, permanent surface facilities, and traffic. Because the CRVFO acknowledges that the fisheries component in this resource area has felt the impacts from energy development, TU feels strongly that the Plan must contain sufficient mitigation measures to thwart contamination issues.

Riparian setbacks, or buffers, are valuable in a variety of ways. From headwaters to downstream municipal communities, protection of our nation's water systems remains a top priority for many reasons. Ecologically, waters are the most important element in any living system. Protecting water systems provide a healthy benefit for more than just fish; terrestrial wildlife including big game, large and small mammals, birds, insects, amphibians and reptiles all benefit by having clean water. Additionally, livestock and agricultural operations benefit from managed riparian areas. The implications of current scientific literature for management are that a stream buffer, a riparian setback, or forested buffer should be viewed as not only a parcel-specific best management practice, such as a stormwater management pond or a bioretention structure, but also as a watershed-scale management system (Chagrin River Watershed Partners, Inc. 2006. *"Riparian Setbacks: Technical Information for Decision Makers."*).

We are now beginning to understand the greater role of water quality on the physical association between streams and their riparian corridor. Moreover, small first order streams that generate more of the runoff in watersheds and are home to Colorado's cutthroat trout species appear to play a significant role in intercepting runoff that reaches the downstream system. These small streams provide important water quality filtration services that extend far downstream and enhance water quality throughout the watershed. When these systems become contaminated with pollutants, large acreage distribution of these pollutants becomes a significant impact, affecting more than just the localized surface area. It affects the entire watershed. Burkhart mapped hydrologically-based locations for effective stream buffer placement in the Deep Loess Region of Iowa, Missouri, and Nebraska (Burkhart, M.R., D.E. James, and M.D. Tomer. 2004. *"Hydrologic and terrain variables to aid strategic location of riparian buffers"*. Journal of Soil and Water Conservation. 59(5): p.216-223). Results demonstrated that riparian areas in small first order streams exhibited much greater potential to intercept larger fractions of runoff and affect basin-wide water quality more than larger streams. These small stream catchments were dominated by groundwater, creating a very high potential for nitrate and some contaminant removal.

Finally, the persistence of contaminant concentrations can exist within stream sediments and riparian areas for long periods of time. Parker found significant organic compounds in urban streams in Phoenix, Arizona that had been banned nearly 30 years ago and were now no longer in use (Parker, J.T.C., K.D. Fossum, and T.L. Ingersoll. 2000. *"Chemical characteristics of urban stormwater sediments and implications for environmental management, Maricopa County, Arizona."* Environmental Management. 26(1): p. 99-115). Similar results of long-term contamination concentrations from oil and gas activities were recently documented in EPA's Pavillion, Wyoming water quality contamination study (November 2011). By implementing a one-quarter mile buffer on all perennial waters an effective barrier is provided to intercept any potential spill or subsurface contamination event, and potentially minimizing costly remediation efforts.

Consideration of mitigation measures such as stronger buffers will ensure the retention and proliferation of these CRCT populations in both the short- and long-term, including restoration efforts that expand the ranges in and around these streams. With sensitive species occurring within the

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resource area, it is important that the CRVFO consider mitigation for all fish and wildlife species and their habitat components. We recommend the following:

- ◆ Include how water quality and quantity issues (as it relates to oil and gas impacts on the watershed, fisheries, wildlife) will be mitigated. This may include stronger buffer or setback implementation, directional drilling access from greater distances to avoid sensitive plants or streamside vegetation, use of matt boards or ramps, etc.
- ◆ We recommend a .25 mile buffer setback on all current and potential Colorado River cutthroat trout habitat, all perennial streams, and additional buffers of 500 feet on intermittent streams to protect potential brood rearing areas.
- ◆ The significance of potential harms from oil and gas development activities to Colorado's waters cannot be underestimated. Road crossings and stream crossings must incorporate timing restrictions during spawning periods for all trout waters as mitigation components.
- ◆ Consideration for how remediation and mitigation efforts to prevent such contamination events should be a part of the Plan.
- ◆ Of particular importance is the impact to the watershed in light of the recent push for expanded use of hydraulic fracturing during oil and gas well development. In view of the numerous incidents of water and stream contamination and spill events which have occurred in recent years within the resource area, a more thorough and prescriptive analysis should be included in the Plan.

### **3. Vegetative removal should not be the only mitigation option in the Plan.**

While we support some of the vegetative treatments described in the Plan to enhance some of the plant vigor, we feel the Plan EA is narrowly focused on implementing mitigation opportunities that concentrate more on the removal of vegetation for big game species rather than seeking ways to further protect habitat. With the abundant and available new science-based data on vegetative treatments and documented habitat impacts from oil and gas development, TU recommends that the CRVFO provide a wider range of mitigation techniques to supplement and enhance the Plan.

- ◆ Develop a broader Plan that incorporates habitat treatments and protections (such as the use of matt ramps, moisture capture containers, fabric treatments) of valuable habitat areas that don't necessarily remove habitat but keep it viable and in a functioning condition.
- ◆ Identify islands of prime habitat that will not be destroyed or removed and develop protection opportunities.
- ◆ Implement a local seed capture program for reseeding native and ecologically suited species.
- ◆ Provide a much stronger riparian and wetland protection mitigation component of the Plan.
- ◆ Protect mitigation areas in a type of "banking" concept which encourages new growth in old growth shrub stands, protects forb and grassland areas from livestock grazing, and sets aside future new important habitat areas.
- ◆ Remove all high value mitigated areas from future oil and gas leasing consideration.

### **4. The Plan should not be tiered to an outdated Oil and Gas EIS and Resource Management Plan.**

The EA states the Plan will tier to the 1999 Oil and Gas Leasing and Development Final Supplemental Environmental Impact Statement (FSEIS) as well as the Glenwood Springs RMP (currently under revision). The use of these outdated documents is inappropriate and provides inadequate protection for the impacts currently occurring in the CRVFO and expected to occur due to the increase in oil and gas

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development activity. TU suggests that the mitigation measures identified in the 1999 FSEIS may not be appropriate for current conditions and expanding oil and gas (and renewable) energy development.

Much has changed in the CRVFO since the analysis conducted in the 1999 FSEIS. Changes include new technologies used to access energy resources, larger well pads used in development and production, new water concerns, new fish and wildlife impacts, new air quality impacts and new vegetative impacts. Stipulations on leases may be dated, inadequate or non-existence for ecological variables that are now important considerations. We recommend the following:

- ◆ In developing a comprehensive Plan, make sure it is incorporated into the new oil and gas leasing reform format of the BLM's Instruction Memorandum (IM) 2010-117. For future leasing decisions on proposed lease parcels, the Plan will be a valuable tool in evaluating proposed lease areas.
- ◆ The Plan should include reference to the Colorado BLM's Oil and Gas Leasing Reform Implementation Strategy (March 2011) which establishes the updated process to ensure better protection decisions for leasing areas in BLM's resource areas.
- ◆ Include an assessment in the Plan that takes into account the Consistency Review currently underway within the Colorado BLM office.
- ◆ Tier this Plan to the new CRV RMP currently under revision.
- ◆ Incorporate the latest Conservation Effects Assessment Project (CEAP; December 2011)) initiated by the Natural Resources Conservation Service (NRCS) and develop partnerships that enable the broader ability to assess effects of these mitigation practices on environmental quality at landscape levels, including watershed scales.

##### **5. The Plan should limit exemptions to timing limitations in order to better protection wildlife populations.**

The EA must consider the current status of big game habitat in the CRVFO and whether effective timing restrictions are doing a sufficient job. The impacts of oil and gas development on critical winter range to deer and elk are two-fold: 1) Stress and/or displacement cause by human disturbance such as noise and human presence, and 2) Direct and indirect loss of habitat and habitat use from well pads and roads. The loss of habitat due to surface disturbance compromises the capacity of the range to support deer and elk. The BLM has acknowledged this fact in previous planning efforts, such as the Rawlins RMP (2010), for which the FEIS states:

*Restricting surface disturbing and other disruptive activities within crucial winter range during the winter months would reduce the stress to big game during these critical times. However, loss or alteration of this habitat outside these periods would not be restricted. This prohibits disturbance to the big game during critical time periods but affords no protection to the habitat.* (p. 4-470).

Additionally, a 2011 review of typical federal agencies' management actions shows that when agencies are considering energy development projects, protections for mule deer are not consistently applied or managed. Seasonal restrictions are often waived when relief is requested from energy companies, further weakening the effectiveness of timing limitations (Theodore Roosevelt Conservation Partnership. "Mule Deer and Energy: Federal Policy and Planning in the Greater Green River Basin". May 2011. [www.trcp.org](http://www.trcp.org)).

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*The use of Timing Limitations.* TU is concerned that the Plan emphasizes implementing Timing Limitations (TL) in lieu of NSO in areas of big game winter range. We strongly support NSO applications during both oil and gas exploration and development, and operations and maintenance. Timing limitations are only temporary and do not account for loss of habitat once an area can be accessed and disturbed after the timing limitations expire. Due to the sensitive nature of critical winter range and the specific needs it supplies for the survival of healthy populations of mule deer and elk, timing stipulations do not adequately prevent impacts. Current science supports the recommendation of NSO stipulations in critical winter range. Any direct habitat loss to these important lands compromises the ability of populations to survive when snowpack is at a maximum and temperatures are coldest. Only by utilizing an NSO stipulation for the life of the well will the impacts from disturbances caused by maintenance and servicing wells be prevented. Moreover, timing limitations do nothing to prevent the direct loss of critical winter range and the associated reduced carrying capacity of the lands to support wildlife.

As with elk habitats, critical mule deer range constitutes the best habitat lands that Colorado's mule deer populations need to survive. Because of limited abundance and/or unique qualities, the irreplaceable and sensitive nature of these critical habitats makes them unsuitable for oil and gas development and NSO stipulations that preclude all surface disturbances should be applied.

Research by wildlife biologist Hall Sawyer, among others, on the impacts of oil and gas developments over a 10 year period on mule deer in western Wyoming is clear: a 46% decline in use on critical winter range and a 60% decline in population abundance is directly attributable to the impacts from energy development and relaxing the timing restrictions (Sawyer, Hall, R. Nielson. 2010. "Mule Deer Monitoring in the Pinedale Anticline Project Area: 2010 Annual Report". Presented to the Pinedale Anticline Planning Office). Timing stipulations only speak to the stress or displacement factors discussed earlier, and then only partially. While a timing stipulation prevents surface use, current stipulation definitions in the Glenwood Springs RMP allows "routine operations and maintenance of facilities". In other words, stipulations only apply during the exploration and development stage of energy development. The production stage, which may take place for an additional 30-40 years in the life of an ordinary well, continues to impact big game and other wildlife through the constant year-round presence of vehicles, roads, noise, and human presence; this further stresses deer and elk during the winter.

Another impact to deer and elk from development on crucial winter range is the result of direct habitat loss and fragmentation. Further, while it is fairly easy to quantify direct habitat impacts (loss of vegetation, surface disturbance, etc.), indirect impacts become more difficult to document. In a study, again by Sawyer, on the Pinedale Anticline in western Wyoming, it was found that winter habitat selection and distribution patterns of mule deer were affected by well pad development. Changes in habitat selection and use by mule deer were immediate and little to no acclimation to these well pads was evidenced after 10 years of monitoring (Sawyer, Hall, et. al. 2006. "*Winter Habitat Selection of Mule Deer Before and During Development of a Natural Gas Field*". Journal of Wildlife Management 70:396-403; Sawyer, H., et al. 2009b. "Influence of well pad activity on the winter habitat selection patterns of mule deer." Journal of Wildlife Management 73:1052-1061). Because critical and/or severe winter habitat is limited in size, it becomes even more important to limit any type of development within these critical areas.

It is important to note that while Sawyer's study focused on critical winter range, summer, transition, and migratory ranges are equally important components of mule deer and elk range and the loss or degradation of one will not be compensated by the protection of lesser quality habitat. This is an

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important point, as the EA sets out to provide options for alternative habitat and food sources that may not meet the critical physiological need that critical winter habitat provides .

The Plan fails to account for the mitigation or protection of migration corridors. Research by Hall Sawyer (2008; 2009) on the importance of maintaining mule deer migration routes becomes particularly important in their proximity to gas fields. Distinguishing between high use areas (which may concentrate deer on key forage habitat and create slow movement through an area) and lower-use areas (which provides faster corridor movement and connectivity between high use areas) can provide opportunities for better pad and road development structure, avoiding fragmentation and ensuring deer have safe access between areas (Sawyer, Hall, M. Kauffman. 2008. *"Identifying Mule Deer Migration Routes along the Pinedale Front"*. Report prepared for the Wyoming Wildlife and Natural Resources Trust. May 2008; Sawyer, H. et al. 2009. *"Identifying mule deer migration routes to and from the Pinedale Anticline Project Area"*. Report prepared for University of Wyoming School of Energy Resources, Laramie, WY. November 2009).

Lastly, in another study in the Atlantic Rim area of south-central Wyoming, Sawyer found that sustaining migratory populations of mule deer requires the maintenance and protection of suitable seasonal ranges and maintaining functional uses of migration routes (Sawyer, Hall. 2007. *"Final Report for the Atlantic Rim Mule Deer Study"*. Prepared for Anadarko Petroleum, BLM, and the Wyoming Game and Fish Department. April 2007). This should be a strong mitigation component in the CRVFO WHM Plan.

As supporters of both fish and wildlife habitat conservation TU would like to see crucial wildlife habitat, including big game crucial winter range, parturition areas, and important migration corridors, be managed so that robust wildlife populations and the sporting opportunities they afford persist for generations. Eagle and Garfield counties of Colorado have a history of being one of the premier mule deer hunting areas not only in Colorado but also in the western United States. Sales of non-resident elk hunting licenses is one of the primary funding sources for the Colorado Division of Parks and Wildlife. The recent introduction of Shiras moose to the Grand Mesa will provide another incentive for tourists to visit the area.

The CRVFO resource area has significant challenges in maintaining habitat quality and big game population numbers. For instance, areas west of the Hogback should have strong mitigation components, while state-owned wildlife areas should be given high priority in preventing leasing for development.

- ◆ TU recommends an updated review of the adequacy of the CRV stipulations on big game critical winter range based on the significant amount of development that has occurred since the 1999 Oil and Gas Leasing ROD.
- ◆ Implement NSO areas in the Plan that will remain protected during the life of the oil and gas project.
- ◆ Protect important migration corridors as a mitigation component.
- ◆ Implement annual monitoring and assessments among agencies which will provide valuable answers to future mitigation actions.

## **6. The Plan must include a monitoring and evaluation component.**

As we have earlier mentioned, TU commends the CRVFO for getting ahead of the oil and gas leasing and development rush by implementing the WHMP for oil and gas exploration and development. In order to

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have assurances that true mitigation adequacy will be implemented we suggest the following steps to making sure the Plan guides the success both on a landscape size and on a case-by-case project size.

We recommend the Plan stretch itself and include the following:

- ◆ Set management goals for what conservation mitigation might include in the CRVFO, both from a habitat management scenario and a fish and wildlife species scenario.
- ◆ Implement specific actions that, once identified, which will provide both long-term and short-term results.
- ◆ Monitor and analyze the results making sure that the information is used wisely in response to the science presented.
- ◆ Revise any mitigation management goals, objectives, or monitoring regimes that may be required, and once again, continue monitoring and implementing necessary changes.
- ◆ Share the learning experience with all respective agencies involved in fish and wildlife management.
- ◆ Identify key species that may be good monitoring sirens for future problems and design specific objectives for these species.

### **Summary**

Conservation management and mitigation in landscapes that contain increasing oil and gas development continues to challenge us all. TU advocates for responsible energy development that promotes both the opportunity for industry to access energy resources in an accountable approach and for fish and wildlife populations to continue to exist and thrive on our public lands. We stress the need for the CRVFO to move away from a mitigation plan that is designed for handling only damage control rather than proactive management opportunities. Protecting high value fish and wildlife areas through the implementation of a good RMP and Master Development Plan from industry also means having a strong and useable mitigation plan.

Accountability to our conservation heritage should be shared by all. We offer these suggestions and recommendations in good faith and would like to participate in any opportunities that help move this Plan forward.

Sincerely,

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February 24, 2012

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Colorado River Valley Field Office  
2300 River Frontage Road  
Silt, CO 81652

Submitted via email to [BLM\\_CO\\_SI\\_CRVFO\\_Webmail@blm.gov](mailto:BLM_CO_SI_CRVFO_Webmail@blm.gov)

Subject: Comments on Proposed Wildlife Habitat Mitigation Plan for Oil and Gas  
Exploration and Development

Bill Barrett Corporation (BBC) appreciates the opportunity to provide comments on the subject plan. BBC has worked closely with the BLM on wildlife habitat mitigation projects in the Colorado River Valley Field Office (CRVFO), and we appreciate BLM's efforts to address such projects in a programmatic EIS so that future projects may be expedited.

BBC's only comment on the proposed plan is that BLM consider expanding the scope of the plan to include other types of mitigation projects that are not already addressed by BLM planning documents. For example, inclusion of work performed to install or enhance water features, provide nesting habitat for birds, and other potential mitigation projects would assist in expediting those projects.

Thank you again for the opportunity to comment on this proposed plan. If you have any questions, please contact me at 970-314-9873 or via email at [ddennison@billbarrettcorp.com](mailto:ddennison@billbarrettcorp.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Dennison', is written over a light blue circular background.

Doug Dennison  
Environmental/Governmental Affairs Liaison

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