

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

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**Environmental Assessment  
for the  
Colorado Book Cliffs Restoration Project**

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Grand Junction Field Office  
2815 H Road  
Grand Junction, Colorado 81506

DOI-BLM-CO-130-2012-0048-EA

June 2013



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## **CHAPTER 1 - INTRODUCTION**

### **1.1 IDENTIFYING INFORMATION**

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**BACKGROUND:** A large portion of the Colorado Book Cliffs Restoration Project identified as suitable for vegetation treatments has also been identified as critical wintering habitat for deer and elk. Mixed mountain brush habitats are vital for mule deer and elk that rely on sagebrush and oak brush for cover, forage, feed, and travel routes during winter, summer, and migratory seasons. Deer and elk rely on migration corridors into their wintering areas that are uninhibited by dense vegetation and human-related developments. Suitable treatment areas are dominated by late seral stages of pinyon/juniper and mountain shrub with the grass/forb and sage brush meadows decreasing in size as they are encroached upon by early seral pinyon/juniper and mountain shrub vegetation types. In addition, long existing mountain shrub communities have reached later seral stages in which browse for deer is out of reach. This has resulted in a dramatic decrease in the winter range and quality of winter range for both deer and elk. Along with overly dense mountain shrub communities the existing sagebrush ecosystems within the Planning Area have become degraded since livestock grazing and fire suppression were introduced during Euro-American settlement.

Other issues within the planning area effecting wildlife habitat have been the continued development of minerals, ROWs, recreation and residential development which have caused further habitat loss and fragmentation of migration corridors.

Along with the loss of productive winter habitat for wildlife, a landscape of continuous hazardous fuels is developing in the Colorado Book Cliffs Planning Area. At the same time growing populations and construction of new oil and gas developments in the region have increased substantially along with associated utilities infrastructure. Following a landmark fire season the National Fire Plan (NFP) was developed in 2000 to address and treat these hazardous fuels. The Healthy Forest Initiative signed in August 2002 and the Healthy Forests Restoration Act signed in December 2003 gave additional support to the NFP and have equipped land managers with additional tools to achieve long-term objectives in reducing hazardous fuels and restoring fire-adapted ecosystems.

**PROJECT NAME:** Colorado Book Cliffs Restoration Project

**PLANNING UNIT:** Grand Junction Field Office

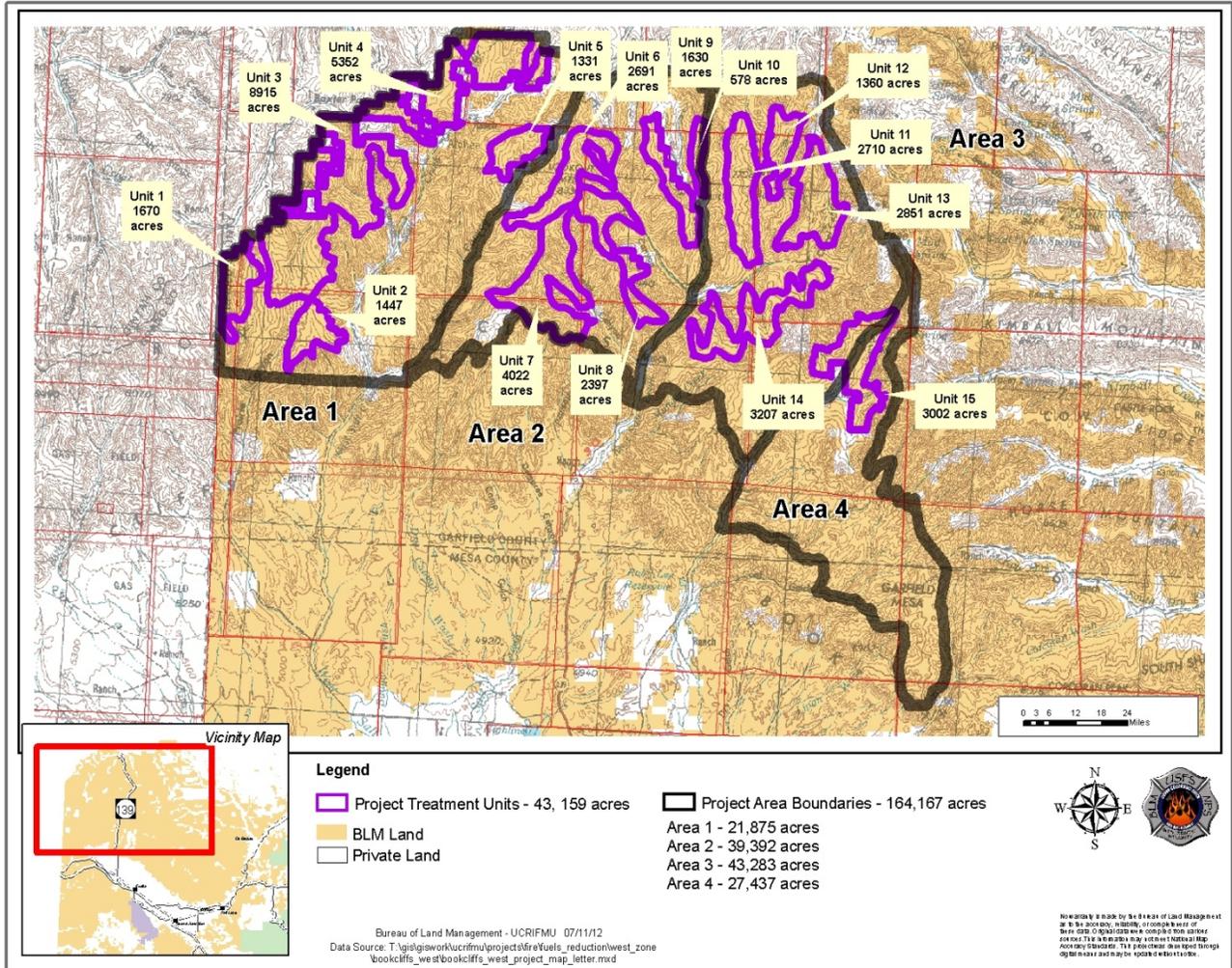
### **1.2 PROJECT LOCATION AND LEGAL DESCRIPTION**

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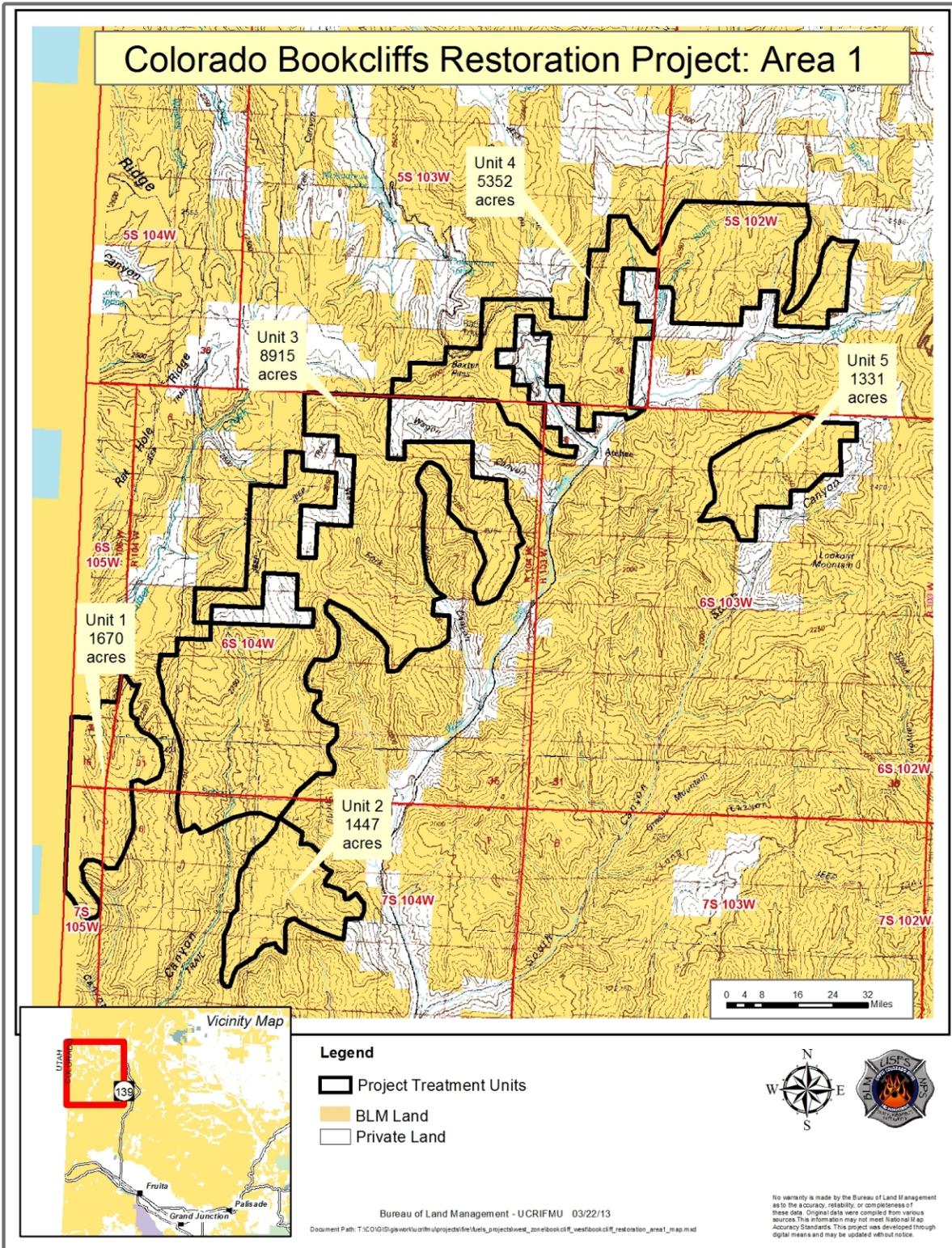
**LEGAL DESCRIPTION:** 6th PM: Township (T) 5 S., Range (R) 103W, Sections 24-27, and 33-36; T. 5 S., R. 102 W., Sections 19- 21, and 28-30; T. 5 S., R. 101 W., Sections 31-36; T. 5 S., R. 100 W., Section 31; T. 6 S., R. 105 W., Sections 25 and 36; T. 6 S., R. 104 W., Sections 1- 4, 8-17, 19- 24, and 27- 34; T. 6 S., R. 103 W., Sections 1-4, 9-14, 22-26, and 33-36; T. 6 S., R. 102 W., Sections 1-22, 24, 25, 28-33, 35 and 36; T. 6 S., R. 101 W. Sections 3-10, 15-17, 19-22, 27-29, 31-33, 35, and 36. T. 7 S., R. 105 W., Sections 1 and 12; T. 7 S., R. 104 W., Sections 3-10,

and 15-17; T. 7 S., R. 103 W., Sections 1-4 and 12; T. 7 S., R. 102 W., Sections 1-7, and 10-12; and T. 7 S., R. 101 W., Sections 1-6, 9-15 and 23 in Mesa, County, Colorado

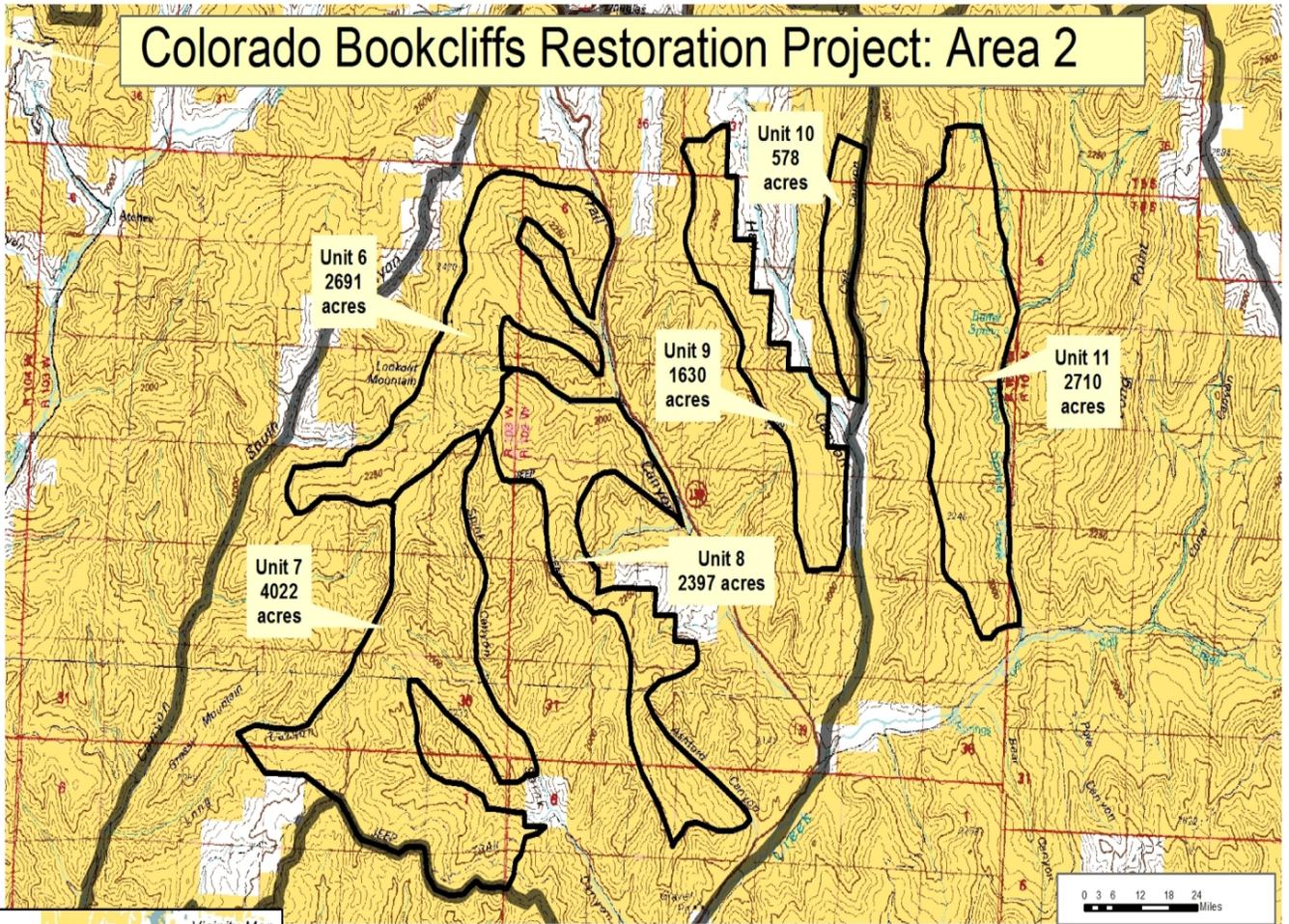
Map of Colorado Book Cliffs Restoration Project Area



Map of Colorado Book Cliffs Restoration Project Area's 1-4.



# Colorado Bookcliffs Restoration Project: Area 2



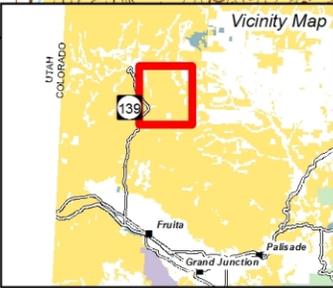
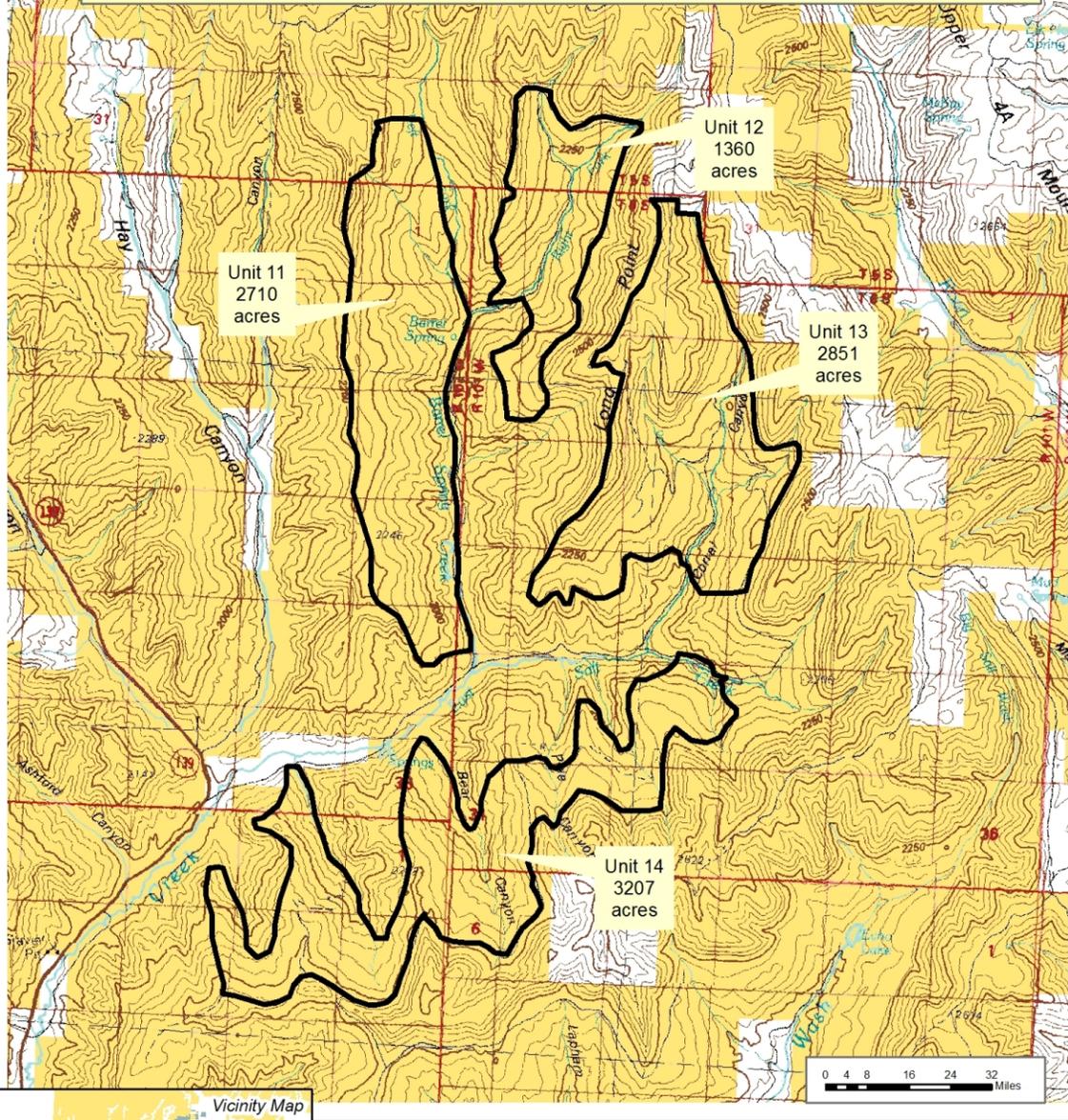
- Legend**
- Project Treatment Units
  - BLM Land
  - Private Land



Bureau of Land Management - UCRIFMU 05/30/12  
 Data Source: T:\gis\work\ucrifu\projects\fire\fuels\_reduction\west\_zone\bookcliffs\_west\bookcliffs\_restoration\_unit6\_thru\_11\_map.mxd

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# Colorado Bookcliffs Restoration Project: Area 3



- Legend**
- Project Treatment Units
  - BLM Land
  - Private Land

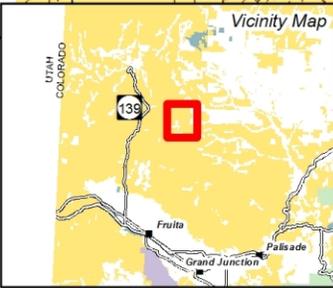
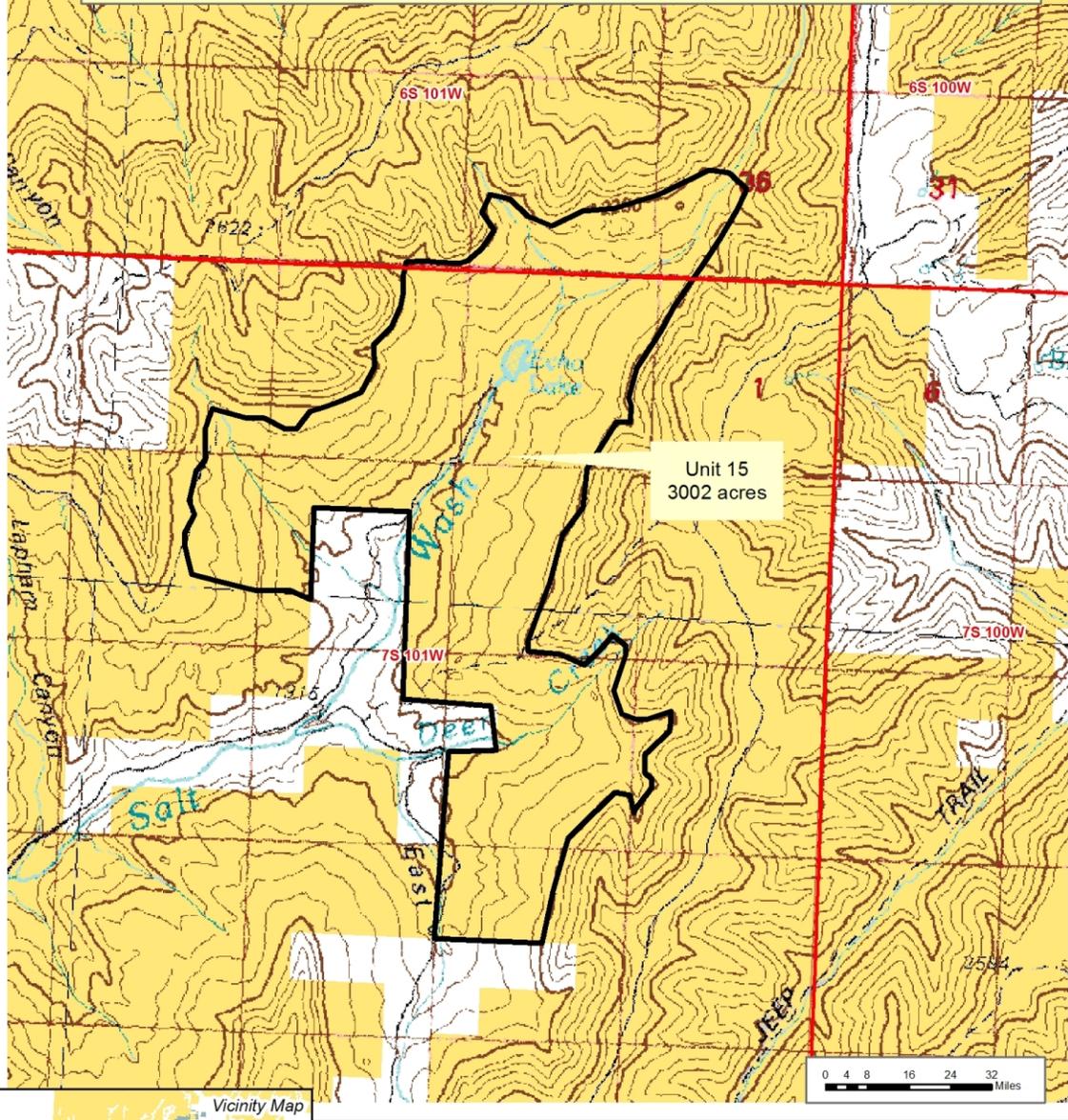


Bureau of Land Management - UCRIFMU 03/22/13

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# Colorado Bookcliffs Restoration Project: Area 4



- Legend**
- Project Treatment Units
  - BLM Land
  - Private Land



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No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project was developed through digital means and may be updated without notice.

### **1.3 PURPOSE AND NEED**

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The Colorado Book Cliffs Restoration Project would provide an efficient and effective landscape treatment approach to encompass many past and current fuels projects along with previous fire areas. The project area encompasses primarily Bureau of Land Management (BLM), Bureau of Reclamation (BOR), and private lands. The project has been initiated to improve habitat conditions for wildlife and livestock along with reducing the risk of catastrophic wildfires to public and private lands. Accomplishing these land management needs would be most effective by implementing a landscape approach by using a variety of treatment methods including but not limited to: mechanical, prescribed fire, and the use of naturally occurring wildfire throughout the project area.

The Colorado Book Cliffs Restoration Project is a vegetation treatment designed to reduce risk from hazardous fuels. This treatment would help alter the wildland fire behavior, help suppression efforts and cost, reduce the risk of damage to adjacent private property. In addition, the treatment would improve the diversity of seral stages, age classes and species richness within the vegetative communities.

### **1.4 PLAN CONFORMANCE REVIEW**

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PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: GRAND JUNCTION Resource Management Plan

Date Approved: JANUARY, 1987

Decision Number/Page: WM-5-2-14, and FM-4-2-32

Decision Language: Wildlife Management: Actively manage the areas shown on Map 10 and listed in Table 11 placing management emphasis on the key species shown, and Fire Management: Assign levels to areas based upon protection of resource values present, and manage or suppress fires as prescribed by the assigned levels.

In January 1997, the Colorado State Office of the BLM approved the Standards for Public Land Health and amended all RMPs in the State. Standards describe the conditions needed to sustain public land health and apply to all uses of public lands.

Standard 1: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods.

Standard 3: Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.

Standard 4: Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Standard 5: The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado.

Because standards exist for each of these five categories, a finding must be made for each of them in an environmental analysis. These findings are located in Chapter 3 of this document.

## **1.5 PUBLIC PARTICIPATION**

**1.5.1 Scoping**: NEPA regulations (40 CFR §1500-1508) require that the BLM use a scoping process to identify potential significant issues in preparation for impact analysis. The principal goals of scoping are to allow public participation to identify issues, concerns, and potential impacts that require detailed analysis.

Persons/Public/Agencies Consulted: Scoping, by posting this project on the Grand Junction Field Office (GJFO) NEPA website, was the primary mechanism used by the BLM to initially identify issues. No issues were identified during public scoping.

## **1.6 DECISION TO BE MADE**

The BLM will decide whether to implement the proposed Grand Junction Watershed Hazardous Fuels Reduction project based on the analysis contained in this Environmental Assessment (EA). The BLM may choose to: a) implement the project as proposed, b) implement the project with modifications/mitigation, c) implement an alternative to the proposed action, or d) not implement the project at this time.

# **CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES**

## **2.1 INTRODUCTION**

The purpose of this chapter is to provide information on the Proposed Action and Alternatives. In this document the Proposed Action and No Action Alternatives were analyzed in detail.

## **2.2 ALTERNATIVES ANALYZED IN DETAIL**

### **2.2.1 Proposed Action**

Treatments within the Colorado Book Cliffs Restoration project area would consist of a mixture of mechanical, prescribed burn, and the use of naturally occurring wildfires. Mechanical

treatments include hand thinning pinyon-juniper trees and oakbrush, while creating a mosaic pattern which maintains cover for deer and elk. Mechanized treatment utilizing a Fecon machine, or similar, may also be considered in small acreage settings as areas are limited due to steep topography. Follow up chemical treatment of invasive plant species could also occur in areas where non-native species are prevalent in accordance with the BLM approved EA and weed management plan on BLM lands. Opportunities for seeding would also be evaluated. Seeding the area would be done with a mixture of grasses and forbs to boost the establishment of native and natural herbaceous plants in an attempt to reduce the threat of invasion by noxious weeds and other unwanted plants.

Prescribed burns would be conducted in units identified for efficiency and effectiveness. This would include areas identified which can be treated with limited line preparation and ground disturbance, along with maximizing vegetative responses including reduction of hazardous fuel loading. Naturally occurring wildfires would also be used and evaluated for land management needs/ resource benefits as a natural land maintenance and restoration process. The Proposed Action would be implemented starting with Area 2 as the first phase, then continuing with other project areas over the course of several years as budgets allow.

Certain areas within the Planning Area would be deemed as treatment exclusions. Treatments in these identified areas would either be avoided, or done in close coordination with the concerned resource staff member. Monitoring of vegetation before and after project treatment implementation would occur through coordination with the BLM Grand Junction Field Office staff.

General objectives of the project are as follows:

- 1). The main objective in the treatment area is to reduce hazardous fuel loadings by using mechanical, prescribed and natural occurring fire treatments. The focus is on arranging the fuels in a manner that will change fire behavior characteristics to aid in control efforts if there is a wildfire.
- 2). Reduce the number of acres that are currently evaluated as being, or trending towards, Condition Class II and III on public lands to reduce the intensity of wildfires and create a wildfire buffer between private and public lands.
- 3). Improve habitat for wildlife, including deer and elk winter range.

Specific vegetative objectives to meet the general objectives are:

- 1). Modify the horizontal/vertical continuity of the existing fuel profile, reducing the amount of natural fuels within the burn units by 30-70%.
- 2). When using mechanical treatment, create a vegetative mosaic by increasing the crown distance between large trees to at least three times the height of the tree, to reduce juvenile trees by 80%, and reduce the amount of shrub cover by 40-60%.

3).To increase the frequency of forbs and grasses by 10 to 30% within 10 years.

The following design features are also part of the Proposed Action:

1. Locate, flag, and protect any survey monuments (brass cap monuments, bearing trees, private monuments) that may exist in this project area.
2. Areas to be avoided by equipment to protect other resource values would be flagged prior to project implementation and their location reviewed as part of the pre-work conference with the contractor.
3. Equipment would be cleaned through established procedures as part of the contract Statement of Work to prevent the spread of noxious weeds.
4. Fueling of machinery and storage of fuel would be accomplished through established procedures as part of the contract Statement of Work.
5. Determine and flag boundaries of the treatment areas near private lands prior to fuel reduction to avoid treatment of private lands.
6. Existing roads and trails would be used by agency and contractor personnel to eliminate development of new routes and trails. When driving off roads, personnel would avoid repeatedly driving back and forth via the same route.
7. To reduce visual impacts avoid cutting or clearing areas along straight lines, using natural vegetation patterns where possible.
8. Schedule project work between July 15<sup>th</sup> and May 15<sup>th</sup>, which would comply with measures to protect species identified by the Migratory Bird Treaty Act.
9. Seed mix would be tested as certified to prevent the introduction of noxious weed species.
10. The edge of all treatment areas would be undulating or feathered to leave pockets of vegetation in place in closer proximity to any nearby creeks.
11. Coordinate with the wildlife biologist and Colorado Department of Parks and Wildlife to best determine timing and operation procedures to limit any possible wildlife issues.
12. Right-of-way holders would be notified, and all road, utility, oil and gas, and other authorized facilities would be located prior to commencement of the project to assure that no damage would occur.
13. Conduct only hand thinning within 50 feet of perennial waters.

14. Buffer perennial streams and springs from prescribed fire by a minimum distance of 100 feet when adjacent hill slopes are 40 percent or less and a minimum of 200 feet when adjacent hill slopes are 40 percent or greater.
15. A class III Cultural field inventory would be conducted in specific project areas prior to mechanical implementation. Additional cultural protective/mitigation measures are listed in Appendix 2.

### **2.2.2 No Action Alternative**

Under the no action alternative the Colorado Bookcliffs project would not be completed.

## **CHAPTER 3 - AFFECTED ENVIRONMENT AND EFFECTS**

### **3.1 INTRODUCTION**

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This section provides a description of the human and natural environmental resources that could be affected by the Proposed Action and presents comparative analyses of the direct, indirect and cumulative effects on the affected environment stemming from the implementation of the actions under the Proposed Action and other alternatives analyzed.

This EA draws upon information compiled in the Grand Junction Resource Area RMP (BLM 1987) and the Grand Junction Resource Area Plan and Environmental Impact Statement (BLM 1985)

#### **3.1.1 Elements Not Affected**

The following elements, identified as not being present or not affected will not be brought forward for additional analysis:

- There are no effects on Special Status Plants.
- There are no effects on Geology.
- There are no effects on Minerals.
- There are no effects on Paleontological Resources.
- There are no effects on Social/Economic issues.
- There are no Wild and Scenic Rivers in the project area.
- There is no wilderness in the project area.
- There are no Prime or Unique Farmlands in or near the project area.
- There are no Special Designations.

Several of these elements are present in the action area, but would not be affected by the proposed action and/or were not brought up as a concern during internal and external scoping.

#### **3.1.1 Past, Present, Reasonably Foreseeable Actions**

NEPA requires federal agencies to consider the cumulative effects of proposals under their review. Cumulative effects are defined in the Council on Environmental Quality (CEQ) regulations 40 CFR §1508.7 as "...the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency...or person undertakes such other actions." The CEQ states that the "cumulative effects analyses should be conducted on the scale of human communities,

landscapes, watersheds, or airsheds” using the concept of “project impact zone” or more simply put, the area that might be affected by the proposed action. The area that may be affected by this project includes the northern Bookcliffs project area. To assess past, present and reasonably foreseeable actions that may occur within the affected area a review of GJFO NEPA log and our field office GIS data was completed. The following list includes all past, present and reasonably foreseeable actions known to the BLM that may occur within the affected area:

#### Past and Present Actions:

##### Action - date

- BLM mechanical thinning (Hydroaxe) and seeding to reduce hazardous fuels and improve wildlife habitat. 2004-2005
- BLM broadcast burning. 2004-2006
- Livestock grazing has a long history in the area and continues to occur
- Commercial and Residential development
- Recreation (motorized and non-motorized)
- Right-of-way grants for oil and gas facilities, roads, and utilities
- Oil and gas development

#### Reasonable Foreseeable Actions

- BLM mechanical thinning (Fecon/Chainsaw). 2013-2023
- BLM slash piling and pile/broadcast burning. 2013-2023
- Ongoing oil and gas development as well as construction and maintenance of ROWs
- Continuation of livestock grazing

This list of past, present and reasonably foreseeable actions was considered when analyzing cumulative effects in sections 3.3, 3.4, and 3.5 below.

## **3.2 PHYSICAL RESOURCES**

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### **3.2.1 Air Quality and Climate Change**

#### Current Condition:

Air quality in the project area is typical of undeveloped regions in the western United States. The primary sources of air pollutants in the region are fugitive dust from the desert to the west of the planning area, unpaved roads and streets, seasonal sanding for winter travel, motor vehicles, and wood-burning stove emissions. Seasonal wildfires throughout the western U. S. may also contribute to air pollutants and regional haze. The ambient pollutant levels are usually near or below measurable limits, except for high short-term increases in PM<sub>10</sub> levels (primarily wind-blown dust), ozone, and carbon monoxide. Within the Rocky Mountain region, occasional peak ozone levels are relatively high, but are of unknown origin. Elevated concentrations may be the result of long-range transport from urban areas, subsidence of stratospheric ozone or photochemical reactions with natural hydrocarbons. Occasional peak concentrations of CO and SO<sub>2</sub> may be found in the immediate vicinity of combustion equipment. Locations vulnerable to decreasing air quality include the immediate areas around mining and farm tilling, local population centers, and distant areas affected by long-range transportation of

pollutants. Representative monitoring of air quality in the general area indicates that the existing air quality is well within acceptable standards.

The EPA General Conformity regulations require that an analysis (as well as a possible formal conformity determination) be performed for federally sponsored or funded actions in non-attainment areas and in designated maintenance areas when the total direct and indirect net air pollutant emissions (or their precursors) exceed specified levels. Since the GJFO is not within a non-attainment or a maintenance area, the Clean Air Act conformity regulations do not apply.

No Action:

Direct and Indirect Effects: No direct impacts are anticipated under the No-Action alternative. Indirect impacts to air quality may occur if pinyon-juniper encroachment progresses increasing fuel loading and elevating potential for high intensity wildfire. Particulate matter associated with wildfire may reduce air quality until suppression efforts are completed.

Cumulative Effects: Cumulative effects to air quality could occur if pinyon-juniper encroachment were to occur at the landscape scale. Increased fuel loading and elevated potential for large, high intensity wildfire over the landscape could collectively deteriorate air quality for extended periods of time.

Proposed Action:

Direct and Indirect Effects: Direct impacts may result from increased production of fugitive dust associated with transportation to the project areas and from surface disturbance resulting from hydro-ax or similar mechanical treatment operations. However, these impacts would be short term (during implementation only) and largely confined to the project area. Smoke permits would be obtained from the State of Colorado APCD. The BLM would follow these permitted conditions thus limiting the potential of negative short term smoke impacts to surrounding communities. Further coordination with the National Weather Service during the prescribed burn would help ensure ventilation index would be adequate disperse smoke up and away from these communities. Indirectly, the proposed action would reduce fuel loading and minimize risk of large, high intensity wildfire. Reduced wildfire potential would also reduce potential for air quality deterioration associated with large, high intensity wildfire.

Cumulative Effects: Implementation of the proposed action could help reduce potential for large, high intensity wildfire which would also reduce potential for air quality deterioration associated with such events.

### **3.2.4 Soils (includes a finding on Standard 1)**

Current Condition:

Soils within the project area have been mapped by the Natural Resource Conservation Service (NRCS) in an Order III soils survey of Douglas-Plateau Area, Colorado, Parts of Garfield and Mesa Counties (NRCS 2003). Table 1 outlines the affected soil mapping units and highlights soils with potentially high risk for erosion.

The Forest Service Water Erosion Prediction Program (WEPP), Fuel Management (FuME) Interface was used to model hill-slope sedimentation occurring from representative hill slopes in every soil mapping unit covering greater than 50 acres within the project area. Soil mapping units representing a greater percentage of the project area were subject to multiple hill slope model runs to create average values. Site specific NRCS soil mapping data, aerial photography, 10 meter digital elevation maps (DEMs), and local climate data for the Grand Junction Bookcliffs area of western CO were utilized as inputs to the model. Model Runs were performed to estimate sedimentation occurring the first year following treatments as well as the average annual hill-slope sedimentation anticipated over a 50-year period with reoccurring treatment efforts. It is important to note that under the proposed action, the BLM would have the option to utilize naturally occurring wildfire for resource benefit when those opportunities are appropriate. Because these fires would be managed for resource benefits, modeling efforts for this document would treat wildland as prescribed fire with the understanding that sedimentation rates may be slightly higher than under true prescribed fire conditions. The following table identifies current (background) sedimentation rates for representative hill slopes on all soil types. Analysis results for all model runs are located in attachment 3 of this document. In general, higher background rates of erosion (greater than 15 tons/mi<sup>2</sup>/year) occur when slopes exceed 40%, soil texture is loam or clay loam, and roads are present. A full analysis of model results is described in detail in the environmental effects to soils portion of this document.

Area 1 is situated within the West Salt Creek Watershed. The BLM conducted a formal land health assessment within the West Salt Creek Assessment area in 2008. Data collected as part of this effort indicates all soils within the project area are meeting public land health standard 1.

Areas 2, 3, and 4 are situated within the East Salt Creek Watershed which was part of the North Desert Land Health Assessment Area. The BLM conducted a formal land health assessment in this area during the 2005 field season. Data collected as part of this effort indicates nearly all soils within the project area are meeting public land health standard 1. The only exceptions are soil mapping unit 5 situated within the drainage bottom of Hay Canyon (project unit 9) and soil mapping unit 17 situated within the drainage bottom of Calf Canyon (project unit 10). The Land Health Assessment identifies historic grazing, road impacts, as well as fire impacts that may be contributing towards site degradation.

Table 3.2.4-1: Background Erosion Rates

soil type	soil texture	mid % slope ave.	Estimated Sedimentation Rate (tons/mi <sup>2</sup> /year)		Issues (roads)	Issues (slopes)	*Erosion Category (high = 15 or greater, moderate = 5-15, low < 5)
			Background (includes low access roads)	high access roads			
5	loam	12	3.82	1.5	yes	no	low
7	sandy loam	25	3.16	0.3	no	no	low
				0.5			
9	clay loam	20	5.16	2.7	yes	no	moderate
13	loam	50	23.44	6.1	yes	slopes greater than 40%	high erosion
17	sandy loam	54	7.53	2.6	yes	no	moderate
				0.3	no		
				1			
27	loam	20	8.58	1.6	yes	no	moderate
				3	no		
42	loam	55	23.7	13.2	yes	slopes greater than 40%	high erosion
47	loam	26	10.32	0	no	no	moderate
	clay loam			0.6	no		
				4	yes		
				0.7	no		
loam	3.7	yes					
48	loam	26	12.09	3.5	yes	no	moderate
55	loam	4	0.39	0	no	no	low
56	loam	21	8.3	6.5	yes	no	moderate
57	loam	23	10.15	0	no	no	moderate
				2.5	yes		
60	loam	27	12.11	0	no	no	moderate
61	loam	62	20.58	0	no	slopes greater than 40%	high erosion
65	loam	57	25.17	0	no	slopes greater than 40%	high erosion
67	loam	47	18.02	0	no	slopes greater than 40%	high erosion
				1.9	yes		
				2	no		
71	loam	67	20.48	0	no	slopes greater than 40%	high erosion
75	sandy loam	28	3.58	1.2			
				2.9	yes	no	low
				1.2	no		

<http://forest.moscowfs.wsu.edu/fswepp/>

\*Erosion categories are for comparison purposes only.

No Action:

Direct and Indirect Effects: Under the No-Action alternative the BLM would not manipulate vegetation within the project area. Restoration of pre-suppression ecosystem functions would not occur. The potential for large, high severity wild fire would be elevated. Factors influencing soil condition after a fire include vegetation type and condition, soil texture, duration of the fire, and heat intensity. Fire may expose mineral soil surface to full raindrop impact, which, when combined with reduction of the surface layer organic matter and litter, decreases water infiltration rates and directly affects the velocity and volume of overland flow. Fire may destroy organic matter and biota, and, if hot enough, seal the surface layers to moisture penetration, temporarily reducing soil moisture content and biologic activity. Table 2 identifies model results for estimated average annual anticipated hill-slope sedimentation under the no-action alternative. Analysis results for all model runs are located in attachment 3 of this document.

Table 3.2.4-2: Background Erosion Rates under current fire regime.

Project Area ID	Background Sedimentation Rate Assuming High Severity Wildfire every 65 Years (tons/year)
Area 1	432
Area 2	308
Area 3	192
Area 4	66

<http://forest.moscowfs.wsu.edu/kswepp/>

Furthermore, encroachment of pinyon and juniper has been linked to reduced forage production, altered wildlife habitat, changes in plant community structure and composition, and increased overland flow and erosion from these landscapes (Pierson et al., 2008). Increased overland flow and elevated erosion rates would result from decreased effective ground cover where encroaching pinyon and juniper trees shade out desirable species. As effective ground cover is reduced, the percentage of, and connectivity between areas of bare soil is elevated. These factors enhance potential erosion, sediment transport, and invasion by undesirable vegetative both from and within the project areas if left untreated. These impacts would be indirect and were not part of the modeling effort for this analysis.

Cumulative Effects: Cumulatively, the No-Action alternative would do nothing to preventing the long-term decline in ecological conditions that accompanies vegetation encroachment or large, high intensity wildfire. In the event of high intensity wildfire, hill-slope erosion rates were modeled to increase as much as 50-times background conditions the following year. The anticipated impact could reduce overall watershed function and condition as topsoil could be rapidly lost and no longer be available to sustain healthy vegetative communities. In the absence of wildfire, continued encroachment of PJ and reduced vigor of perennial grasses could increase potential establishment of noxious and invasive annuals (e.g. cheat grass) and/or increased percentage of bare ground. In response,

soil and vegetative health could be anticipated to decline over time and erosion rates may be elevated above current background conditions.

Proposed Action:

Surface disturbance associated with prescribed fire, thinning, and mechanical vegetation manipulation (e.g. hand line, truck traffic, hydro-axe operations) could temporarily decrease soil stabilization and result in elevating erosion potential. Prescribed fire can also effect soil erosion rates as ground cover can be consumed leaving soils exposed and vulnerable to erosional forces. Soil destabilization is most likely to occur on steep slopes in soils having loamy or clay loam textures and lacking rock and vegetation as natural stabilizing agents. Design features such as flagging avoidance areas prior to treatment, limiting activities during wet or saturated conditions, and seeding, would help to minimize surface disturbance to protect soil resources.

The modeling effort described under current conditions was also used to quantify the effects of prescribed fire and thinning (mechanical treatment) on hill-slope erosion from representative hill slopes of all soil types in the project area. Modeling results indicated slight increases in erosion rates in the year following treatments. However, these treatments are anticipated to reduce the threat and severity of future wildfire thus reducing average annual erosion rates when compared to existing background conditions (assuming a Wildland fire cycle of 65 years, prescribed fire cycle of 20 years and a thinning cycle of 20 years). Tables 3.2.4-3 and 3.2.4-4 highlight erosion rates associated with proposed management practices and identify percent reductions in sedimentation rates from existing background conditions. Note that because all models have associated error, design features of the proposed action such as buffers to streams and avoiding the use of heavy equipment on steep slopes should be implemented to fully protect these resources.

Table 3.2.4-3: Estimated Sedimentation Rates associated with Prescribed Fire.

Project Area ID	Background Sedimentation Rate Assuming High severity Wildfire every 65 Years (tons/year)	Sedimentation Rate with Prescribed Fire Assuming only <b>moderate</b> future wildfire severity every 65 years (tons/year)	% Reduction from Background	Sedimentation Rate with Prescribed Fire Assuming only <b>low</b> future wildfire severity every 65 years (tons/year)	% Reduction from Background
Area 1	432	137	68	81	81
Area 2	308	93	70	55	82
Area 3	192	61	68	36	81
Area 4	66	21	68	12	82

<http://forest.moscowfs1.wsu.edu/fswepp/>

Table 3.2.4-4: Estimated Sedimentation Rates associated with Thinning/Mechanical Treatments.

Project Area ID	Background Sedimentation Rate Assuming High severity Wildfire every 65 Years (tons/year)	Sedimentation Rate with Thinning/mechanical treatments Assuming only <b>moderate</b> future wildfire severity every 65 years (tons/year)	% Reduction from Background	Sedimentation Rate with Thinning/mechanical treatments. Assuming only <b>low</b> future wildfire severity every 65 years. (tons/year)	% Reduction from Background
Area 1	432	89	79	33	92
Area 2	308	61	80	23	93
Area 3	192	40	79	15	92
Area 4	66	14	79	5	92

<http://forest.moscowfsl.wsu.edu/fswpepp/>

*Finding on Standard 1:* Soils within the proposed project area currently meet Standard 1. Because vegetation health is anticipated to improve with implementation of the proposed action, soil health would also improve. Standard 1 would continue to be met.

**Cumulative Effects:** Implementation of the proposed action combined with effective range and travel management within the project area would contribute towards restoration of a pre-suppression ecosystem. This would be beneficial to overall soil health as vegetative communities would be improved and surface disturbance would be minimized. As a result, soil stabilization would be elevated maintaining/reducing (improving) hill-slope sedimentation rates when compared to background conditions (see tables 3 and 4).

### 3.2.5 Water (surface and groundwater, floodplains) (includes a finding on Standard 5)

Current Condition:

Area 1: The proposed project in this area would directly impact the Bitter Creek, West Salt Creek, and Prairie Canyon watersheds. All of the identified watersheds have perennial stream reaches and springs situated within the project boundaries. Perennial water sources are important for both livestock and wildlife in these areas. The primary issue concerning water resources in Area 1 is increased erosion and sedimentation resulting in water quality degradation (primarily salinity and sediment) to the Colorado River.

Area 2: The proposed project in this area would directly impact West Salt Creek, East Salt Creek, Hay and Calf Canyon. Only East Salt Creek, Hay Canyon, and Calf Canyon are identified as supporting perennial stream reaches. Numerous perennial and seasonal springs are situated at higher elevations near Douglas Pass. Perennial water sources are important for livestock and wildlife as well as irrigation in these areas. The primary issues concerning water resources in Area 2 are increased erosion and

sedimentation resulting in water quality degradation (primarily salinity and sediment) to the Colorado River.

Area 3: The proposed project in this area would directly impact East Salt Creek, Barrel Springs Creek (both left and right forks), and Corral Canyon. All of the identified watersheds have perennial stream reaches and springs situated within the project boundaries. Perennial water sources are important for both livestock and wildlife in these areas. More specifically, the upper reaches of Barrel Springs support cold water fish species (non-native brook trout) which are particularly sensitive to changes in water quality. The primary issue concerning water resources in Area 1 is increased erosion and sedimentation resulting in water quality degradation (primarily salinity and sediment) to the Colorado River.

Area 4: The proposed project in this area would directly impact Big Salt Wash, Deer Creek and Echo Lake as well as numerous perennial springs. Perennial water sources are important for livestock, wildlife as well as irrigation in this area. Surface water features are vulnerable to water quality degradation primarily due to dewatering, sedimentation and salinization.

All of the proposed project areas are situated within water quality stream segment 13a of the Lower Colorado River Basin. Stream segment 13a is defined as “all tributaries to the Colorado River including wetlands, from a point immediately below the confluence of Roan Creek to the Colorado/Utah border except for the specific listings in Segments 13b through 19”. Stream segment 13a is designated “Use Protected” and further classified for aquatic life warm 2, Recreation P, and agricultural use types. A complete list of numeric standards for physical, biological, inorganics, and metals is available through CDPHE Regulation 37 (CDPHE. 2012).

The same Forest Service Water Erosion Prediction Program (WEPP), Fuel Management (FuME) Interface used to model hill-slope erosion under the soil resource section was also used to quantify the volume of sediment delivered to two areas of special concern Barrel Springs Creek and Echo Lake. These two areas were selected based on importance of resource values (proximity to riparian, perennial water, and cold water fish species (Barrel Springs)) as well as vulnerability to surface disturbance or changes in land management (erodibility of soils, slump hazard areas, and steepness of slopes). Model runs consisted of various buffers to surface water resources ranging from 1 ft to 200 ft so sedimentation volumes in the year following disturbance could be evaluated. The results from these model runs were extrapolated throughout the entire project area when making recommendations for stream and spring buffers. Table 3.2.5-4 outlines model estimates for sedimentation volumes by buffer width the year following treatment or wildfire from hill slopes in the Barrel Springs Creek and Echo Lake areas. Table 3.2.4-1 in the soil resource section displays current (background) erosion rates within the project area. Analysis results for all model runs are located in attachment 3 of this document.

Table 3.2.5-1: Estimated initial sedimentation in the Barrel Springs Creek and Echo Lake areas from representative hill slopes.

Area of Concern	Model Estimates of Initial Sedimentation (tons/mi <sup>2</sup> ) following treatment											
	1 ft buffer			50 ft buffer			100 ft buffer			200 ft buffer		
	Wildfire	Rx	Thinning	Wildfire	Rx	Thinning	Wildfire	Rx	Thinning	Wildfire	Rx	Thinning
Echo Lake	620.8	44.8	6.4	550.4	38.4	6.4	499.2	38.4	6.4			
	1414.4	38.4	0	1209.6	25.6	0	1062.4	25.6	0			
	876.8	25.6	0	832	19.2	0	819.2	12.8	0			
Barrel Springs Creek	147.2	6.4	0	147.2	6.4	0	147.2	6.4	0			
	339.2	19.2	0	288	12.8	0	256	6.4	0			
	204.8	6.4	0	204.8	6.4	0	204.8	6.4	0			
	908.8	25.6	0	896	19.2	0	883.2	19.2	0	851.2	12.8	0
	1593.6	51.2	0	1382.4	32	0	1260.8	25.6	0	1100.8	25.6	0
	1555.4	44.8	0	1369.6	32	0	1241.6	25.6	0	1056	19.2	0

<http://forest.moscowfsl.wsu.edu/fswepp/>

*Finding on Standard 5:* A review of Colorado’s 2012 303(d) List of Impaired Waters and Monitoring and Evaluation List (CDPHE 2012c) was done to see if the affected stream segment was identified on either list. Stream segment 13a was not identified and therefore water quality within the proposed project area currently meets Standard 5.

No Action:

Direct and Indirect Effects: Under the No-Action alternative BLM would not manipulate vegetation within the project area. Restoration of pre-suppression ecosystem functions would not occur. The potential for large, high intensity wild fire would be elevated. High intensity wildfire can destroy essential soil stabilizing agents and, if hot enough, create hydrophobic soils. Reduced soil stabilizing agents and the formation of hydrophobic soils decreases soil infiltration rates and resistance to erosion. As a result, potential for overland flow, erosion, and sediment delivery to area streams is elevated, increasing potential water quality degradation. Table 3.2.4-2 in the soil resource section displays model results for anticipated hill-slope sedimentation within each project area following high intensity wildfire.

Furthermore, Pinyon-Juniper encroachment would likely continue in some of these areas. Encroachment of pinyon and juniper has been linked to reduced forage production, altered wildlife habitat, changes in plant community structure and composition, and increased overland flow and erosion from these landscapes (Pierson et. al., 2008). Increased overland flow and elevated erosion rates would result from decreased effective ground cover where encroaching pinyon and juniper trees shade out desirable species. As effective ground cover is reduced, the percentage of, and

connectivity between areas of bare soil is elevated. These factors enhance potential erosion and downstream water quality deterioration from encroachment areas if left untreated. These impacts would be indirect and were not part of the modeling effort for this analysis.

*Finding on Standard 5:* Water quality within the proposed project area currently meets Standard 5. The No-action alternative would not directly result in water quality degradation or water quality impairments.

**Cumulative Effects:** The No-Action alternative would do nothing to preventing the long-term decline in ecological conditions that accompany vegetation encroachment or high intensity wildfire. In the event of high intensity wildfire, hill-slope erosion rates were modeled to increase as much as 50-times background conditions the following year (see tables 3.2.4-1 and 3.2.4-2 in soil resource section). The anticipated impact would be reduced overall watershed function and condition. With continued P/J encroachment and further reduction in perennial grass productivity, desirable and diverse vegetative communities would be lost to noxious/invasive annuals (e.g. cheat grass) and/or the percentage of bare ground would be increased with the loss of perennial grass species. Decreased soil and vegetative health would result in decreased soil infiltration rates, reduced soil moisture storage potential, limited soil productivity, elevated overland flow potential, and increased sediment delivery to area streams. Collectively, these associated impacts would deteriorate water quality.

Proposed Action:

**Direct and Indirect Effects:** Surface disturbance associated with mechanical vegetation manipulation (e.g. hydro-axe) would temporarily decreased soil stabilization elevating erosion potential. Prescribed fire can also effect soil erosion rates as ground cover can be consumed leaving soils exposed and vulnerable to erosional forces. Modeling efforts outlined in the soils section of this document verify that soil destabilization is most likely to occur on steep slopes (slopes equal to or greater than 40%) in soils having loamy or clay loam textures and lacking rock and vegetation as natural stabilizing agents. Areas naturally prone to erosion are most likely to contribute towards water quality degradation with increasing proximity to surface water features. Design measures of the proposed actions such as buffering streams, springs, and reservoirs would provide protection for surface water from sedimentation as vegetative buffers would slow run-off and filter sediment prior to reaching streams or reservoirs. Design features specific to soil resources would also benefit water quality as soil erosion would be reduced.

The modeling effort described under current conditions was also used to quantify the effects of prescribed fire and thinning (mechanical treatment) on sedimentation to surface drainages and reservoirs from representative hill slopes in all soil types. Modeling results indicated slight increases in erosion rates in the year following treatments. However, these treatments are anticipated to reduce the threat and severity of future wildfire thus reducing average annual erosion rates when compared to existing background conditions (assuming a Wildland fire cycle of 65 years, prescribed fire cycle of 20 years and a thinning cycle of 20 years). Tables 3.2.4-3 and 3.2.4-4 highlight

erosion rates associated with proposed management practices and identify percent reductions in sedimentation rates from existing background conditions. Table 3.2.4-5 displays how buffers to sensitive resources (surface water) can influence the volume of sediment (impact) being delivered to these areas. Note that because all models have associated error, design features of the proposed action such as buffers to streams and avoiding the use of heavy equipment on steep slopes should be implemented to fully protect these resources.

Additionally, because prescribed fire and vegetation/fuels treatments would help promote vegetative diversity and improve potential for perennial grass production, it is anticipated that background sedimentation rates would be further decreased (improved) following implementation of the proposed project.

*Finding on Standard 5:* Water quality within the proposed project area currently meets Standard 5. Because vegetation health (watershed health) is anticipated to improve with implementation of the proposed action, water quality would also improve. Standard 5 would continue to be met.

**Cumulative Effects:** Implementation of the proposed action combined with effective range and travel management within the project area would contribute towards restoration of a pre-suppression ecosystem. This would be beneficial to overall watershed health as vegetative communities would be improved and surface disturbance would be minimized. As a result, soil stabilization would be elevated maintaining/reducing (improving) hill-slope sedimentation rates when compared to background conditions (see tables 1-5). Reduced sedimentation would be beneficial to water quality.

### **3.3 BIOLOGICAL RESOURCES**

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#### **3.3.1 Invasive, Non-native Species**

##### Current Condition:

There are a number of known noxious weed infestations throughout areas 1-4. The BLM weed crew conducted a thorough search for noxious weed infestations from 2002-2004 in the Book Cliff region. Since that time, the weed program has conducted extensive weed treatments on several species within the proposed project area. The following is a synopsis of the weed issues by area:

Area 1: The two predominant species within this area are hoary cress (whiteweed) and houndstongue. The whiteweed is mostly found in the canyon bottoms along roads and in the sagebrush plant communities. Whiteweed quickly disappears from the site as elevation increases on the steep slopes. There are a few isolated patches in the upper elevations along disturbed sites such as ponds and roads. The inverse is true for houndstongue, very little of this weed is found in the canyon bottoms of Area 1, but as elevation increases the plant is more abundant, especially along roads, near springs, trails, etc. This plant is capable of growing in all plant communities but is less abundant in pinon-juniper. Of all of the Areas within the project, Area 1 has the least amount of houndstongue.

Area 2: As with Area 1, the predominant weeds are whitetop and houndstongue. There is a small amount of spotted knapweed in the northern portion of this Area, but not within any of the planned units. Units 9 and 10 are the closest to the spotted knapweed in upper Hay and Edd Canyons. Whitetop is locally abundant in the canyon bottoms along Highway 139 and Hay Canyon. Very little, if any, is found in the upper elevations north of the Demaree WSA. Houndstongue is rare in the southern portion of this area, but locally abundant in the northern 1/3 of the area, especially around Lookout Mountain, Douglas Pass, and the upper portion of the left fork of Barrel Springs (Unit 11). Whitetop treatments for the Highway 139 corridor are planned for 2013. Barrel Springs (Unit 11) has been a focus area by BLM crews in reducing whitetop within the canyon bottom. Treatments resulted in significant reductions of this weed, although not a complete elimination.

Area 3: As with Areas 1 and 2, the primary weeds are whitetop and houndstongue. Unit 13 (Corral Canyon) is especially troublesome for houndstongue in the northern portion of the unit within the canyon bottom. Unit 14 has little or no whitetop, but has scattered houndstongue. The right fork of Barrel Springs (Unit 12) has scattered whitetop in the bottoms and locally abundant houndstongue in the north end.

Area 4: Area 4 (Unit 15) has the same whitetop and houndstongue issues, and the unit contains isolated and small infestations of Russian knapweed along the BLM and private property interface. As with the other units, most of the weeds are found in the valley bottom, with scattered houndstongue possible in all plant communities.

#### No Action:

Direct, Indirect, and Cumulative Effects: Since weeds are opportunistic plants that respond to disturbance, in general, we could say that no action by any of the methods could theoretically result in a reduced chance of weed invasion or spread.

At the same time, the most resilient plant communities (to weeds) are those that support a broad range of species which provide competition against weed invasion. Ideally, across the landscape, there is a mix of seral stages in all plant communities. If the majority of the area is in late seral stages, and an intense wildfire occurs, the stage would be set back to very early seral, which may result in a greater chance of weed invasion (particularly in Pinon-Juniper woodlands).

#### Proposed Action:

Direct and Indirect Effects: The general area of this project is in a portion of the field office that receives more precipitation than other areas, and is thus more resilient to disturbances. Experience has shown that for wildfires in these elevations, rehabilitation is not necessary because residual plants respond well on their own. This is particularly true in the mountain shrub community.

If there were no noxious and invasive weeds in the western U.S., then there would be no issues with disturbance because these ecosystems have always experienced

periodic disturbance (fire). Due to the presence of weeds each proposed project area we will have to be examined regardless of the treatment type to see if there are additional measures that need to be taken. This may mean a pre-project observation for weeds and pre or post weed treatments. The canyon bottoms would be the most likely sites for weeds to be present. Wildfires will be the most difficult to assess, although there may be some options for directing a fire away from concentrated weed areas. The proposed action contains plans for coordination with staff and the potential for exclusion or mitigation. Clean equipment is a standard operating procedure for all projects which would help prevent weed seed spread.

**Cumulative Effects:** The cumulative effects of a broad spectrum of treatments over time should result in a mix of seral stages which would be most resilient to weed invasions.

### 3.3.2 Sensitive Species

#### Current Condition:

Few sensitive plant species are located in areas north of the Book Cliffs. However, one plant community near proposed project areas is identified by the Colorado Natural Heritage Program (CNHP) as an “S1” status plant community, and three are identified as “S2” status plant communities. These rankings have no legal or official status, but they mean that within the state, these communities are regarded as either “**Critically Imperiled**” (*S1 - Critically imperiled because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation or extinction. There are typically 5 or fewer occurrences, or less than 1000 remaining individuals*), or “**Imperiled**” (*S2 - Imperiled because of rarity or because of some factor(s) making it very vulnerable to extirpation or extinction. There are typically 6 to 20 occurrences or between 1,000 and 3,000 remaining individuals*).

#### S1 – Critically Imperiled:

Douglas Fir/Rocky Mountain Maple Forest Natural Community (*Pseudotsuga menziesii/Acer glabrum*): located south-southeast of Douglas Pass in the Headwaters of Trail Canyon (sec.34, T. 6 S., R. 103 W., 6<sup>th</sup> PM). Two identified locations of this community are located up to 1 mile north and outside of Unit 6 in Block 2.

#### S2 – Imperiled:

Water Birch/False Solomon’s Seal Shrubland (*Betula occidentalis/Maianthemum stellatum*): found close to water in montane areas and uncommon on the western slope, within a CNHP identified “Potential Wetland Conservation Area” located in Calf Canyon, tributary of Hay Canyon, just east of Unit 10 in Project Block 2.

Red-osier Dogwood Shrubland (*Cornus sericea*): located within the Potential Wetland Conservation Area mentioned above.

Balsam Poplar Woodland Community (*Populus balsamifera*): located in Corral Canyon (within Unit 13 in Block 3) at a spring in the upper west fork of the Canyon, east of Long

Point. (NOTE: J. Toolen, Wildlife Biologist/Ecologist on GJFO staff visited this site on 5/28/2013 and found no balsam poplar.)

These plant communities within treatment blocks & units G are not targeted for treatment and would be avoided in the planning and implementation of treatments.

Numerous raptors occur in the action area as well as migratory birds. Surveys are not required if timing of burning is in late winter/early spring.

No Action:

Direct and Indirect Effects: Possible indirect effects if wildfire in hot dry months spread into wetland and riparian communities; one of the intentions of the proposed action is to reduce the potential for catastrophic wildfires in the area.

*Finding on Standard 4:* Maintaining status quo regarding high levels of hazardous fuels in the area increases the likelihood of damage to relatively resistant riparian vegetation types described above. High levels of hazardous fuels also increase the likelihood of broader scale damage to nesting birds during spring and early summer nesting periods.

Cumulative Effects: The potential exists for major erosional damage to imperiled plant communities to occur if wildfire burned large portions of the watershed, which is more likely if the overall area is left in current condition.

Proposed Action:

Direct and Indirect Effects: Potential direct effects if treatment such as fire were to escape the target areas and burn in sensitive communities. Prescribed fires conducted in the spring would minimize the potential for burning in the wetland areas discussed above and other imperiled plant communities. Indirect effects such as major erosional events could occur if too much of the watershed were treated in one year or close series of years.

*Finding on Standard 4:* Reduction of hazardous fuels in the project area decreases the likelihood of wildfire damage to imperiled vegetation communities and reduces the potential scale of wildfires during nesting periods for birds of prey.

Cumulative Effects: Potential for major erosional damage to imperiled plant communities if treatments damaged vegetative cover over large portions of the watershed.

### **3.3.3 Threatened or Endangered Species (includes a finding on Standard 4)**

Current condition:

T&E and Sensitive plants are not known to occupy the proposed project area. The proposed project would have no effect on the federally threatened Colorado hookless cactus, DeBeque phacelia, and Parachute Penstemon; the project area does not contain suitable or potential habitat for these species.

The edges of Area 3 and Unit 4 contains small acreages of potential Greater Sage-grouse habitat. Burn units as proposed do not include sage grouse habitat. Phase one of the project does not include any sage grouse habitat.

**3.3.4 Vegetation (grasslands, forest management) (includes a finding on Standard 3)**

Current condition:

The following table lists the ecological sites, plant communities and plant species that dominate the proposed treatment areas.

**TABLE 3.3.4-1: ECOLOGICAL SITES, PLANT COMMUNITIES AND DOMINANT PLANT SPECIES**

ECOLOGICAL SITE / WOODLAND TYPE	PLANT COMMUNITY APPEARANCE	PREDOMINANT PLANT SPECIES IN THE PLANT COMMUNITY
Brushy Loam	Deciduous Shrub/grass Shrubland	Oakbrush, serviceberry, snowberry, mountain brome, slender wheatgrass, western wheatgrass, Letterman and Columbia needle grasses
Pinyon-Juniper	Pinyon/Juniper Woodland	Pinyon, Utah juniper, Gambel’s oak, Indian ricegrass, mountain big sagebrush, serviceberry, snowberry
Mountain Pinyon	Pinyon/Juniper Woodland	Pinyon pine, Utah juniper, mountain mahogany, bitterbrush, serviceberry, Wyoming big sagebrush, bluebunch wheatgrass, western wheatgrass

The proposed treatment areas are meeting Rangeland Health Standard #3 for vegetation, due to the areas dominated by late seral and potential natural communities of pinyon, juniper and mountain shrubs.

No Action:

Direct and Indirect Effects: The areas would remain dominated by pinyon, junipers and mountain shrubs with very little to no understories of grasses. Wild fires would have the potential to rage out of control setting the plant communities back to early seral stages and vulnerable to weed invasion and soil erosion.

Cumulative Effects:

Under the No Action Alternative, continuing past and present cumulative effects of livestock grazing, commercial and residential development and recreation would increase the probability of damaging wild fires that would set the areas back to early seral. Early seral plant communities would be vulnerable to weed invasion and soil erosion.

Proposed Action:

Direct and Indirect Effects: Mechanical treatments to thin pinyon-juniper and prescribed burns to remove dense cover of oak brush and pinyon-juniper would open up areas for native grasses to establish and create a mosaic of vegetation. The main native grasses that would likely increase include: Indian ricegrass, needle and thread grass, mountain brome, bluebunch wheatgrass, western wheatgrass, and squirreltail. The proposed action would create more plant diversity with a mixture of native trees (pinyon, juniper), desirable native shrubs (serviceberry, snowberry, bitterbrush) and native grasses listed above. The diverse plant communities would have stable soils, be resistant to weed

infestations, and decrease the potential for damaging fires that could occur under the current huge fuel load of dense oakbrush, pinyon and juniper.

Cumulative Effects: Under the proposed action there would be a mosaic of vegetation communities at different seral stages that would be less vulnerable to weed infestation, soil erosion and damaging fires.

**3.3.5 Wetlands & Riparian Zones (includes a finding on Standard 2)**

Current condition:

Known riparian and wetland habitat occur within the Book Cliffs Restoration project area along Barrel Springs Creek, Big Salt Wash Creek, Calf Canyon Creek, Corral Canyon Creek, East Salt Creek, Echo Lake, Hay Canyon Creek, Prairie Canyon Creek, Trail Canyon Creek, West Salt Creek, Upper Hells Hole Tributary, various springs and seeps, and other unnamed tributaries. Riparian assessments have not been completed on all of the drainages in the project area and there is potential for additional riparian and wetland zones to be present in areas that have not been assessed such as Deer Creek. Riparian plants that occur in these systems include but are not limited to: *Populus angustifolia* (narrowleaf cottonwood), *Distichlis spicata* (salt grass), *Cornus sericea* (dogwood), *Rhus trilobata* (skunkbush sumac), *Rosa woodsii* (Wood’s rose), *Salix exigua* (sandbar willow), *Acer negundo* (boxelder), *Carex spp.* (sedge), *Betula occidentalis* (birch), *Equisetum arvense* (horsetail), and minimal *Tamarix ramosissima* (tamarisk).

The riparian zones within the project area have been impacted by adjacent roads and historic livestock grazing. Impacts from heavy historic grazing practices that contributed to the decline of riparian and wetland conditions have been reduced in many areas due to changes in livestock grazing practices. Slumping soils within the project area have also affected the distribution of seeps and springs, as well as stability of riparian zones within the project area.

A description of the condition of the riparian zones located within the area is provided below in Table 3.3.5-1.

**Table 3.3.5-1**

<b>Treatment Block</b>	<b>Unit</b>	<b>Riparian Area</b>	<b>PFC Determination</b>	<b>Years Assessed</b>
1	1	Upper Hells Hole Tributary	Not Assessed	NA
	2	Buniger Road Spring	Not Assessed	NA
	3	Prairie Canyon Creek	PFC	2006
	3	Springs (7)	Not Assessed	NA
	4	West Salt Creek	FAR(1993)/PFC(2006)	2006
	4	West Branch of West Salt Creek	FAR	2006
		West Branch of West Salt Creek Tributary1A	PFC/FAR	2006
		West Branch of West Salt	FAR	2006

		Creek1B		
		Springs (7)	Not Assessed	NA
2	6	Trail Canyon Creek	FAR(1993)/PFC(2006)	2006
	8	Trail Canyon Creek	FAR(1993)/PFC(2006)	2006
	8	East Salt Creek (approx. ½ S of treatment area)	PFC	2006
	9	Hay Canyon	FAR(1993)/PFC(2006)	1993/2006
	10	Calf Canyon Creek	FAR(1993)/PFC(2006)	1993/2006
3	11	Barrel Springs	PFC	1993/2006
	11	<i>Barrel Springs Left Fork</i>	<i>PFC(1994)/PFC(2006)/PFC/FAR (2013</i>	<i>1994/2006/2013</i>
	12	<i>Right Fork of Barrel Springs 1</i>	<i>PFC</i>	<i>1993/2006</i>
	12	<i>Right Fork of Barrel Springs 2</i>	<i>PFC</i>	<i>1993/2006</i>
	12	<i>Right Fork of Barrel Springs 3</i>	<i>PFC</i>	<i>2006</i>
	13	<i>Corral Canyon</i>	<i>PFC</i>	<i>1993/2006</i>
	14	<i>East Salt Creek</i>	<i>PFC/FAR</i>	<i>2006</i>
	15	<i>Big Salt Wash</i>	<i>PFC</i>	<i>1993/2006</i>
	15	<i>Echo Lake</i>	<i>Not Assessed</i>	<i>NA</i>
	15	<i>Deer Creek</i>	<i>Not Assessed</i>	<i>NA</i>

*Finding on Standard 2:* Previously completed PFC assessments within the project area indicate that the majority of the riparian systems are meeting the standard (Table 3.3.5-1). Most of these systems have also presented an upward trend towards meeting land health standards. Properly functioning riparian systems have the ability to recover from major disturbances such as those associated with fire, grazing, and flooding. Under current management and uses it is expected that these systems will continue to improve.

No Action:

Direct and Indirect Effects: Under the No-Action alternative BLM would not complete the proposed vegetation treatments. The potential for larger fires with greater burn severity would persist and likely increase within the project area, due to increases in vegetation density and distribution of large woody vegetation. Higher intensity fires would in larger and denser vegetation would lead to higher consumption of riparian vegetation. Increased sedimentation as described in the soil section of the EA may also impact riparian zones by burying existing seed source and herbaceous vegetation such as rushes and sedges. Increased surface runoff may also remove top soil and seed source from these areas and decrease bank stability. High burn intensities could also burn both shoots and roots of plants such as willow that would normally re-sprout under lower burn intensity conditions.

*Finding on Standard 2:* The majority of the riparian zones within the project area are meeting Standard 2. This standard would likely continue to be met under this alternative.

Cumulative Effects: The cumulative effects of this alternative would be a continual buildup of fuels around wetland and riparian zones that would have a higher spread potential and intensity. These larger and higher intensity fires have an increased potential of damaging a larger extent of the wetland and riparian zones on creeks and reservoirs. The recovery time for vegetation to become re-established would also increase due to increased consumption of plants from the fire and higher soil temperatures that may damage or remove roots.

Proposed Action:

Direct and Indirect Effects: Effects on wetland and riparian zones from the proposed action would include scorching or consumption of plant material during prescribed burn and removal of vegetation during mechanical treatments. Increased sediment transport into the riparian zone is also expected for the first 1 to 5 years following the prescribed fire. The addition of a buffer between the riparian zone and the treatment area would reduce direct and indirect effects. The proposed buffers of 50 feet of perennial streams for hand thinning, 100 feet for perennial streams and springs with adjacent slopes of less than 40%, and 200 feet for adjacent slopes of greater than 40% would reduce the direct effects from burning or mechanical removal and damage to plants. Establishment of a buffer would also slow and reduce sediment transport from overland flow during precipitation events. Slowing overland flow would reduce bank erosion and deposition of sediment that may impact rushes, sedges, and other grasses and forbs.

Use of prescribed fire and mechanical vegetation removal techniques would also allow for the selection of burn periods in the spring and fall when fire intensity would be lower than in the summer. Lower burn intensities would allow for a more mosaic pattern and only partial consumption of vegetation. Perennial riparian and wetland vegetation is more likely to re-sprout after a lower intensity fire with only partial consumption of plants. Use of mechanical treatment methods would reduce the potential for uncontrolled spread of the treatment. Clearly marking the treatment boundary as proposed would also ensure that adequate buffers from wetland and riparian zones are maintained during on the ground work. Mechanical treatments that include shredding of vegetation or lop and scatter would increase soil surface roughness and slow overland flow during precipitation events. Pile burning cut vegetation would not increase surface roughness and slow sediment transport into the wetland and riparian zone.

*Finding on Standard 2:*

Under the proposed action the land health standard for riparian systems would continue to be met in areas that are currently meeting the standard. The impact on areas that are not meeting the standard may be negligible to beneficial depending on the contributing causes for the decline in land health. The future ability of riparian systems to continue to meet the standard is protected by this action.

Cumulative Effects: The proposed treatments would have short term cumulative impacts lasting 1 to 5 years resulting from disturbance in and near riparian and wetland zones. Long-term cumulative impacts greater than 5 years would include reduced

potential for direct impact to at least 0.5 miles of a tributary to Rapid Creek and two reservoirs. The potential for fire spread to other portions of Cottonwood Creek, Rapid Creek, and other tributaries would also be reduced from the fuels treatment project. During the regrowth period of treated vegetation the riparian and wetland vegetation along creeks and reservoirs in the and near the project area would be less likely to be impacted by intense wildland fire.

### **3.3.6 Wildlife (includes fish, aquatic and terrestrial) (includes a finding on Standard 3)**

#### Current condition:

Streams and creeks within the action area include bluehead sucker, flannel mouth sucker, rainbow trout, cutthroat trout, brook trout, speckled dace, and brown trout. Burn units would be expected to buffer creeks and streams.

Portions of the burn areas and units are within deer and elk critical and severe winter range. Many preferred browse plants, especially for mule deer, are old, tall, and therefore out of reach and less available and less productive for deer.

Timing of burns would be designed in coordination with biologists to minimize impacts to breeding birds.

#### No Action:

Direct and Indirect Effects: “No action” would not directly affect the current situation. Indirect effects would arise from continuation of current management that leads to older more mature vegetation becoming a progressively higher proportion of the vegetative community over time. Such effects include the further development of mature vegetative communities favoring species more adapted to those types of communities, with correspondingly less acreage in early seral stage communities that provide forage and habitat for species adapted to the younger stages of vegetation communities (mule deer and elk forage in particular).

Another effect is the potential for large acreages of mature vegetation to be lost in unplanned and uncontrollable wildfires. An unplanned loss of a high proportion of mature vegetation communities takes longer (50-100+ years) to replace than loss of early seral stages over time.

#### *Finding on Land Health Standard 3:*

Continuation of the current trend of maturing vegetation and increasing risk of heavy fuel loading leading to uncontrollable wildfire, the “No Action” alternative would increasingly work against maintenance of Standard 3 for early seral species in the short run, and potentially for late seral species over the long run if high proportions of late seral vegetation communities are lost.

Cumulative Effects: The individual actions are part of a larger plan to treat small portions of the Book Cliffs area over a longer time periods to ameliorate the effects on wildlife area as a whole more fire-resistant. Under no action, the current high risk situation would continue.

Proposed Action:

Direct and Indirect Effects: The proposed action would result in habitat alterations and short-term (1-2 years) loss of vegetative cover, which would shift much wildlife use away from a project area for a time. Initial re-use of an area by wildlife would likely be by many different species, while some species, (particularly deer and elk that may have used mature vegetation for cover would shift to using the recently burned areas for foraging, taking advantage of more nutritious and easier to reach grass and browse.

Indirect effects include loss of nesting sites for shrub and tree nesting birds until shrubs and trees return over a 10-100 year period; loss of hiding cover for many species for a similar time period; shift of some species use out of burn areas for that same time frame; and conversely, use by early seral species during that time.

Timing of burning within deer and elk winter range would be designed in coordination with the wildlife biologist to minimize impacts to breeding birds (i.e., planning burns prior to or following primary nesting time periods).

*Finding on Land Health Standard 3:* Creating a more varied mosaic of vegetative seral stages would promote meeting Standard 3 on a more stable basis over time.

Cumulative Effects: The individual actions are part of a larger plan to treat small portions of the Book Cliffs area over a longer time periods to ameliorate long-term effects the effects on wildlife and the watershed while also making the watershed as a whole more fire-resistant, resulting in more stable plant communities and correspondingly stable wildlife populations.

## **3.4 HERITAGE RESOURCES AND HUMAN ENVIRONMENT**

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### **3.4.1 Cultural Resources**

Current Condition:

Approximately 128 previous Class III (intensive) Cultural Resource Inventories have been completed covering a total of 2843 acres within the project area. These surveys were mostly conducted for oil and gas, vegetation treatments and range developments. Site types vary throughout the project and include historic cabins, railroads, trails, rock art/inscriptions and a prehistoric open lithic site.

Area 1: Area 1 has had 69 previous Class III Cultural Resource inventories covering approximately 891 acres. Twelve cultural resource sites (5GF221; 5GF222; 5GF621.2; 5GF621.3; 5GF621.4; 5GF621.5; 5GF622; 5GF641; 5GF642; 5GF642.7; 5GF1130; and 5GF1155) have been recorded during the surveys. The sites types in Area 1 have consisted of historic corrals, trash scatters, camps, rock art, a cairn, railroad grades related to the Uintah railroad, wagon road, and a possible historic Ute Trail. In addition, 11 isolated finds (4 historic isolates and 7 prehistoric isolates) were recorded during previous surveys.

Area 2: Area 2 has had 33 previous Class III Cultural Resource inventories covering approximately 320 acres. One cultural resource sites (5GF454 – a prehistoric open lithic site) has been recorded during the surveys. No isolated finds were recorded during previous surveys.

Area 3: Area 3 has had 14 previous Class III Cultural Resource inventories covering approximately 1213 acres. One cultural resource site (5GF1075 – a historic cabin) has been recorded during the surveys. No isolated finds were recorded during previous surveys.

Area 4: Area 4 has had 12 previous Class III Cultural Resource inventories covering approximately 419 acres. No cultural resource sites have been recorded during the surveys, but two prehistoric isolated finds (5GF131 and 5GF3101) has been recorded.

No Action:

Direct and Indirect Effects: Under the No-Action alternative BLM would not manipulate vegetation within the project area. Restoration of pre-suppression ecosystem functions would not occur. The potential for large, high intensity wild fire would be elevated. High intensity wildfire can destroy essential soil stabilizing agents which can result in increased erosion which could potentially erode away irreplaceable cultural resource sites. Additionally, high intensity wild fires have the potential to impact datable cultural resource materials (such as prehistoric hearths) through contamination.

Cumulative Effects: The cumulative effects under the No-Action alternative would be similar to the direct and indirect effects, but would apply to the larger Book Cliffs landscape.

Proposed Action:

Direct and Indirect Effects: Surface disturbance associated with prescribed fire, thinning, and mechanical vegetation manipulation (e.g. hand line, truck traffic, hydro-axe operations) could temporarily decrease soil stabilization elevating erosion potential. Open campsites and lithic scatters have archaeological features that could be adversely affected by the surface disturbance and erosion caused by the Proposed Action. As described above in the soils section, prescribed fire can also effect soil erosion rates as ground cover can be consumed leaving soils exposed and vulnerable to erosional forces. This soil destabilization is most likely to occur on steep slopes in soils having loamy or clay loam textures and lacking rock and vegetation as natural stabilizing agents. Steep slopes are less likely to have significant cultural resources, but sites located below the slopes could be impacted by runoff. Design features such as flagging significant cultural sites as avoidance areas prior to treatment, limiting activities during wet or saturated conditions, and seeding, would help to minimize surface disturbance to protect cultural resources.

Cumulative Effects: The Cumulative Effects would be the same as those listed in above in the Direct and Indirect Section, though they would be applied to a larger landscape level unit of the Book Cliffs Area in general.

### **3.4.3 Tribal and Native American Religious Concerns**

#### Current Condition:

American Indian religious concerns are legislatively considered under several acts and Executive Orders, namely the American Indian Religious Freedom Act of 1978 (PL 95-341), the Native American Graves Environmental Assessment Protection and Repatriation Act of 1990 (PL 101-601), and Executive Order 13007 (1996; Indian Sacred Sites). In summary, these require, in concert with other provisions such as those found in the NHPA and ARPA, that the federal government carefully and proactively take into consideration traditional and religious Native American culture and life and ensure, to the degree possible, that access to sacred sites, the treatment of human remains, the possession of sacred items, the conduct of traditional religious practices, and the preservation of important cultural properties are considered and not unduly infringed upon. In some cases, these concerns are directly related to “historic properties” and “archaeological resources”. In some cases elements of the landscape without archaeological or other human material remains may be involved. Identification of these concerns is normally completed during the land use planning efforts, reference to existing studies, or via direct consultation. General consultation for proposed vegetation treatment projects implemented under the National Fire Plan has been conducted with tribes who traditionally used the GJFO area. Concerns identified included eradication of sage, impacts to medicinal plants, and general modern intervention in the natural processes. Consultation for this project is currently occurring with the Ute Mountain Ute Tribe, the Ute Indian Tribe and the Southern Ute Indian Tribe.

#### No Action:

Under the No Action alternative Direct and Indirect Effects: BLM would not manipulate vegetation within the project area. Restoration of pre-suppression ecosystem functions would not occur. Tribal access to areas of concern would not be impacted.

Cumulative Effects: Same as direct and indirect impacts.

#### Proposed Action:

Direct, Indirect and Cumulative Effects: Under the proposed action, prescribed fire, thinning, and mechanical vegetation manipulation (e.g. hand line, truck traffic, hydro-axe operations) could temporarily limit access for tribal members to particular areas due to safety concerns. If areas of concern are brought up during this or subsequent analysis, modifications could be made to the proposed action for tribal concerns.

Protective/Mitigation Measures: The Ute Tribes have a generalized concept of spiritual significance that is not easily transferred to Western models or definitions. As such the BLM recognizes that they have identified sites that are of concern because of their association with Ute occupation of the area as part of their traditional lands. No traditional cultural properties, natural resources, or properties of a type previously

identified as being of interest to local tribes, are anticipated to be found during the cultural resources inventory of the project area. If sites of interest to local tribes are found during Class III inventory of the individual Project Area Units, consultation, including field visits to evaluate the sites, discuss the effects of the project, and incorporate appropriate protection measures would be made before implementation. Consultation between the BLM and interested tribes (typically the Ute Indian Tribe, The Southern Ute Indian Tribe and the Ute Mountain Ute Tribe) would occur when the Class III surveys for specific units of the proposed action have occurred. The BLM would, as appropriate, flag and avoid areas of concern to the tribe, or potentially modify the proposed action within the unit boundaries to accommodate tribal concerns.

#### **3.4.4 Visual Resources**

##### Current Condition:

The proposed project area lies on the northwest flank of the Grand Mesa along the boundary of the Southern Rocky Mountains and Colorado Plateaus physiographic provinces. The project area spans two Visual Resource Inventory Scenic Quality Rating Units: SQRU 31 – VRI Class III, Scenic Quality B, Sensitivity Medium, Foreground/Middle-ground Distance Zone; and SQRU 35 – VRI Class IV, Scenic Quality C, Sensitivity Medium, Foreground/Middle-ground Distance Zone.

The landscape is characterized by irregular terrain with massive rounded to low pointed hills and deep drainages sloping toward steep cliffs. Texture is medium to smooth with heavy scrub oak and juniper vegetation creating a fairly uniform dark green color, with seasonal variations from grey in the winter to brighter green in the spring and summer.

The area is used primarily for administrative purposes for maintenance of oil and gas facilities, and seasonally by hunters and occasionally by other recreationists. These users would constitute the casual observer.

The project area lies within areas classified as Visual Resource Management (VRM) Classes II, III and undesignated. It has been the general practice of the GJFO to manage undesignated areas using VRM Class III objectives which allow moderate levels of change to the landscape and where management activities may attract attention, but should not dominate the view of the casual observer. Change should repeat the basic elements found in the natural landscape. In VRM Class II areas the level of change to the landscape should be low and management activities may be seen but should not attract the attention of the casual observer.

##### No Action:

Direct and Indirect Effects: Under this alternative the fuel management prescriptions would not be implemented so there would be no direct effects to visual resources, however, there would be increased potential for large-scale wildfires that could create short-term visual impacts from smoke and fire-fighting operations, as well as longer term impacts to the visual characteristics of the landscape. These effects could include a reduction in scenic contrast created by a large uniformly burned area. This

could compromise the ability to manage this area to meet VRM Class II and III objectives.

**Cumulative Effects:** The direct and indirect impacts described above due to the increased potential for large-scale wildfires would be added to the visual impacts from ongoing watershed management activities, utility development and recreation, further compromising the ability to manage this area to meet VRM Class II and III objectives.

Proposed Action:

**Direct and Indirect Effects:** Equipment and personnel would be visible during fuel management operations, but only to observers in close proximity to the project area. Visual impacts immediately following prescribed operations would include weak to moderate increases in visual contrast created by changes to vegetative composition. These contrasts would fade quickly with vegetative regrowth following the initial disturbance. Implementing the project design feature of avoiding linear boundaries to treatments would further reduce visual impacts. Avoidance of treatments in the areas of designated VRM II would eliminate direct and indirect visual impacts to those areas; however the prescribed treatments would create a low to moderate level of change to the characteristic landscape, and would meet the VRM Class II and III objectives described above.

**Cumulative Effects:** The impacts to visual resources in the project area from the proposed action would be minimal, with cumulative impacts from ongoing management activities, utility development and recreation playing a more significant role in changes to the characteristic landscape.

### **3.4.7 Hazardous/Solid Wastes**

Current Condition:

Hazardous and solid wastes are not a part of the natural environment and generally not be expected in the project area. However, hazardous wastes could be introduced as a result of implementation of the mechanical treatments that required fuel to be transported and used (for projects using the Fecon.)

No Action:

**Direct and Indirect Effects:** There would be no impacts.

**Cumulative Effects:** There would be no impacts.

Proposed Action:

**Direct and Indirect Effects:** Transportation and use of fuel for the Fecon machinery could potentially result in the generation of hazardous waste (contaminated soil, surface water, ground water (the least likely effect)) if fuel was spilled. The design features include standard operating procedures for fuel management – restricting the areas where refueling would occur and prompt reporting of all spills so cleanup can be effected quickly. If these design features are followed, negative effects would be expected to be non-existent or temporary and minor in nature. Fuel volumes anticipated

would be relatively small and remediation of any spills would be expected to be relatively easy to carry out, resulting in temporary and minor impacts.

Cumulative Effects: Expected to be minor or none.

## **3.5 LAND RESOURCES**

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### **3.5.2 Recreation**

#### Current Condition:

The primary recreation activity in the project area is big game and mountain lion hunting. Some mountain hiking, equestrian, mountain biking and OHV use also occurs in the area, but is limited by the difficulty of access. Motorized access is limited to the fall big game rifle hunting seasons. The rugged and remote nature of the area limits the volume of non-motorized use. No quantifiable estimates of visitor use for this area are available. The project area is not designated as a recreation management area. The BLM administers Special Recreation Permits (SRPs) authorizing commercial big game outfitters to operate in the project area. Additionally, the BLM authorizes commercial mountain lion outfitters to operate in the project area.

#### No Action:

Direct and Indirect Effects: Under this alternative there would be no direct effects to recreation. Recreation would be affected indirectly if a lack of fuel management leads to catastrophic wildfires resulting in diminished wildlife habitat, consequently lowering game populations and hunting opportunities.

Cumulative Effects: The indirect effects to recreation described above would be added to impacts from ongoing watershed management activities, utility development, which could also reduce game numbers and diminish hunting opportunities.

#### Proposed Action:

Direct and Indirect Effects: Fuel management operations would directly impact recreationists using the area, especially if those operations took place during big game or mountain lion hunting seasons, or during the permitted mountain bike race. Activity from the fuels operations would temporarily displace wildlife from the immediate project area and would likely reduce hunter success.

The proposed action would likely have an indirect benefit to hunters by improving wildlife habitat and, consequently, hunting opportunities. By reducing the threat of catastrophic wildfire, the proposed project would enhance long-term recreation opportunities.

Cumulative Effects: The proposed action, in combination with ongoing watershed management activities on the adjoining non-BLM lands, would have similar direct and indirect impacts to recreation as those described under the proposed action above.

### 3.5.3 Range Management

#### Current Condition:

The following grazing allotments and permits occur in the proposed project areas and units.

#### Area 1:

West Salt Allotment

Lazy 3X Land and Cattle, LLC

9,933 AUMs, grazing season 03/01 to 02/28 (year round)

David K. Terrell

159 AUMs, grazing season 07/01 to 11/01

Prairie Canyon Allotment

David K. Terrell

667 AUMs, grazing season 06/01 to 11/25

#### Area 2:

West Salt Allotment

Lazy 3X Ranch and Cattle, LLC

9,933 AUMs, grazing season 03/01 to 02/28 (year round)

East Salt Allotment

High Lonesome Ranch

3,852 AUMs, grazing season 03/01 to 02/28 (year round)

Dry Canyon-Demaree

Jerry and Kimberly Gunderson

271 AUMs, grazing season 12/02 to 04/01

#### Area 3:

East Salt Allotment

High Lonesome Ranch

3,852 AUMs, grazing season 03/01 to 02/28 (year round)

Lapham-Post Allotment

Thomas W. Wood

605 AUMs, grazing season 05/02 to 11/15

#### Area 4:

Big Salt Allotment

Albertson Cattle Company

1,299 AUMs, grazing season 03/01 to 02/28 (year round)

Coal Gulch Allotment

John V. and Carol F. Cassidy (Manager – Tim Cassidy)

303 AUMs, grazing season 06/01 to 10/01 or 10/01 to 12/31

Some of these grazing permits are year round, but timing of grazing in the proposed restoration project areas would occur in the late spring through fall months (05/01 to

11/15) for all the permits. Due to the dense cover of oak brush and pinyon-juniper, livestock grazing is currently limited in these areas.

No Action:

Direct and Indirect Effects: Under the No Action Alternative the oak brush, and pinyon-juniper would remain dense with limited livestock use.

Cumulative Effects: The proposed project area’s huge fuel loads would make the areas vulnerable to large damaging fires that could lead to soil erosion and weed invasion.

Proposed Action:

Direct and Indirect Effects: Controlled burns and mechanical treatments would open up the dense cover to create a mosaic of grasses mixed with stands of shrubs and trees. The livestock would benefit greatly from the additional forage and management of livestock would be improved by opening up more areas to improve distribution of cattle. Livestock use would be managed in the treatment units to allow the recovery of plants for at least two growing seasons when necessary. Livestock would be moved through the areas and not allowed to spend time in the treatment areas when rest is needed for recovery.

Cumulative Effects: Cumulative effects that would benefit livestock and wildlife can be attributed to the additional forage production and available rangeland that would result after completion of the project. Potential for damaging and devastating fires would be reduced which would prevent soil erosion and weed invasion.

**3.5.4 Land Tenure, Rights-of-Way, and Other Uses**

Current Condition:

The Master Title Plats and LR2000 Database indicate numerous right-of-way (ROW) grants for oil and gas facilities, roads, and utilities within the project area, as listed below:

Table 3.5.4-1

Location	Serial Number	ROW Grant Holder	Type
<b>T. 5 S., R. 102 W.</b>	COC-25122D	ETC Canyon Pipeline LLC	Gas Pipeline
	COC-58441	Encana Oil & Gas	Gas Pipeline
	COC-078067	Moon Lake Elec Assn	Power Transmission Line
	COC-25122BY	ETC Canyon Pipeline LLC	Gas Pipeline
	COC-25122G	ETC Canyon Pipeline LLC	Gas Pipeline
	COC-67717	CDX Gas LLC	Road
<b>T. 5 S., R. 103 W.</b>	COC-68754	Mark and Polly Hill	Water Pipeline
	COC-078067	Moon Lake Elec Assn	Power Transmission Line
	COC-68754	Mark and Polly Hill	Water Pipeline
	COC-67717	CDX Gas LLC	Road
	COC-25122G	ETC Canyon Pipeline LLC	Gas Pipeline
	COC-69548	Enterprise Products Oper LP	Gas Pipeline
	COC-012469	ETC Canyon Pipeline LLC	Gas Pipeline
	COC-061150	Century Link/CenturyTel of Eagle	Communication Site
	COC-29366	Mid-America Pipeline Co	Liquid Hydrocarbon Pipeline
	COC-62466	Mid-America Pipeline Co	Gas Pipeline

	COC-014909	ETC Canyon Pipeline LLC	Reservoir, Storage Tank
	COC-69038	ETC Canyon Pipeline LLC	Gas Pipeline
	COC-4705	Moon Lake Elec Assn	Power Line
<b>T. 6 S., R. 101 W.</b>	COC-25378	ETC Canyon Pipeline LLC	Compressor Site
<b>T. 6 S., R. 102 W.</b>	COC-25378C	ETC Canyon Pipeline LLC	Gas Pipeline
	COC-49003	Encana Oil & Gas	Gas Pipeline
	COC-011243	Northwest Pipeline	Gas Pipeline & Block Valve Site
	COC-05006	Public Service Co	Gas Pipeline
	COC-12261	Colo Dept of Transportation	Hwy - Douglas Pass South
	COC-1891	Northwest Pipeline	Cathodic Protection Station
	COC-49046	Northwest Pipeline	Road
	COC-27658	Encana Oil & Gas	Gas Pipeline
	COC-61023	Northstar Gas Co	Gas Pipeline
	COC-35098	Encana Oil & Gas	Road
<b>T. 6 S., R. 103 W.</b>	COC-60160	Northwest Pipeline	Road
	COC-61023	Northstar Gas Co	Gas Pipeline
	COC-25122CZ	ETC Canyon Pipeline LLC	Gas Pipeline
<b>T. 6 S., R. 104 W.</b>	COC-36723	Encana Oil & Gas	Road
	COC-40268	D&G Roustabout	Gas Pipeline
	COC-58797	Encana Oil & Gas	Road
<b>T. 7 S., R. 101 W.</b>	COC-33224	Encana Oil & Gas	Road
	COGS-07402	Bowman, Cuddy, Lane, Mahaney	Irrigation Ditch & Reservoir
	COC-50802	Maralex Resources Inc.	Gas Pipeline
	COC-50857	Maralex Resources Inc.	Gas Pipeline
	COGS-07401	Tobias Bowman, Albert Mahaney	Echo Lake Reservoir
<b>T. 7 S., R. 102 W.</b>	COC-35157	Belco Dev Corp	Road
<b>T. 7 S., R. 104 W.</b>	COC-49031	Lone Mtn Production Co	Road
	COC-58797	Encana Oil & Gas	Road

No Action:

Direct and Indirect Effects: Under the no action alternative, ROW facilities could be vulnerable to fire damage in the event of a large wildfire in the area.

Cumulative Effects:

There would be no measurable cumulative effects.

Proposed Action:

Direct and Indirect Effects: Authorized facilities would not be impacted by the proposed action as long as the facilities are identified and avoided in accordance with the design features for the project.

Cumulative Effects: None.

## CHAPTER 4 - CONSULTATION AND COORDINATION

### 4.1 LIST OF PREPARERS AND PARTICIPANTS

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#### INTERDISCIPLINARY REVIEW

NAME	TITLE	AREA OF RESPONSIBILITY
Christina Stark	Acting Planning and Environmental Coordinator	Riparian, Wetlands
Julia Christiansen	Natural Resource Specialist	Oil and Gas
Alissa Leavitt-Reynolds	Archaeologist	Cultural Resources, Native American Religious Concerns
Michelle Bailey Chris Pipkin	Outdoor Recreation Planner	Access, Transportation, Recreation, VRM, Wilderness, ACECs
Scott Clarke	Range Management Specialist	Vegetation, Range
Jacob Martin	Range Management Specialist	Range, Forestry
Jim Dollerschell	Range Management Specialist	Range, Wild Horse & Burro Act
David Scott Gerwe	Geologist	Geology, Paleontology
Alan Kraus	Hazard Materials Specialist	Hazardous and Solid Wastes
Robin Lacy	Realty Specialist	Land Status/Reality Authorizations
Heidi Plank John Toolen	Wildlife Biologist	Migratory Bird Treaty Act, T&E Species, Terrestrial & Aquatic Wildlife
Anna Lincoln	Ecologist	Land Health Assessment, T&E Plant Species
Nate Dieterich	Hydrologist	Soils, Air Quality, Water Quality Hydrology, Water Rights
Colin Ewing	Planning and Environmental Coordinator	Environmental Justice, Prime & Unique Farmlands, Environmental Coordinator
Wayne Werkmeister	Assistant Field Manager	Renewable Resource Program
Sparky Taber	Range Management Specialist	Weed Coordinator, Invasive, Non-Native Species
Lathan Johnson	Fire Ecologist Natural Resource Specialist	Fire Ecology, Fuels Management

## **4.2 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED**

Colorado State Historic Preservation Office, Colorado Division of Parks and Wildlife. Mesa County, Garfield County, High Lonesome Ranch.

## **CHAPTER 5 - REFERENCES**

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# APPENDIX 1

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
GRAND JUNCTION FIELD OFFICE

## Colorado Bookcliffs Restoration DOI-BLM-CO-130-2012-0048-EA

### INTERDISCIPLINARY TEAM ANALYSIS REVIEW RECORD AND CHECKLIST

**Project Title:** Colorado Bookcliffs Restoration  
**Project Leader:** Jeff Phillips  
**Date Proposal Received:** N/A  
**Date Submitted for IDT review/input:** 4/1/2013

**Due Date for IDT review/input:**

**Consultation/Permit Requirements**

Consultation	Date Initiated	Date Completed	Responsible Specialist/ Contractor	Comments
Cultural/Archeological Clearance/SHPO			ALR	Pending Class I review
Native American	5/7/2013		ALR	Pending Class I review
T&E Species/FWS/CDOW			JT	None required
Permits Needed (i.e. Air or Water)				Air quality-smoke

**(NP) = Not Present**

**(NI) = Resource/Use Present but Not Impacted**

**(PI) = Potentially Impacted and Brought Forward for Analysis.**

N P NI PI	Discipline/Name	Date Review Comp.	Initials	Review Comments (required for elements that are not carried forward for analysis.)
<b>I. PHYSICAL RESOURCES</b>				
PI	Air Quality and Climate	5/22/13	ND	
	Geologic Resources			There are no geologic resources, in the proximity of the proposed project area.
	Mineral Resources			There are no mineral resources, in the proximity of the proposed project area.
PI	Soils	5/22/13	ND	
PI	Water (hydrology\water rights\floodplains)	5/22/13	ND	No impact to water rights.

<b>II. BIOLOGICAL RESOURCES</b>				
	Invasive, Non-native Species			
	Sensitive Species (Plant/Animal/Migratory Birds)	5/24/13	JT	None
	Threatened or Endangered Species	6/12/13	JT	None
	Vegetation	5/23/13	SC	
	Wetlands & Riparian Zones			
	Wildlife (includes fish, aquatic and terrestrial)	6/12/13	JT	Generally positive impacts for most species over short & long term.
<b>III. HERITAGE RESOURCES and HUMAN ENVIRONMENT</b>				
	Cultural Resources	6/3/13	ALR	Potential impacts to cultural resources currently not known to the agency. Class III survey will be required in portions of most units prior to treatment. Consultation with SHPO needs to occur after a Class I review and after results are known and significant sites would be avoided by project redesign.
	Paleontological Resources			There are no paleontological resources, in the proximity of the proposed project area.
	Tribal and Native American Religious Concerns	6/3/13	ALR	Potential impacts to tribal resources currently not known to the agency. Class III survey would be required in portions of most units prior to treatment. Consultation with tribes would occur after a Class I review and after results are known and significant sites/area would be avoided by project redesign.
	Visual Resources			
NP	Social			
NP	Economic			
NP	Environmental Justice			According to the most recent Census Bureau statistics (2000), there are no minority or low income communities within the /// Planning Area.
	Noise			
	Transportation/Access			
PI	Wastes, Hazardous or Solid	5/29/13	AK	
<b>IV. LAND RESOURCES</b>				
NP	Farmlands, Prime and Unique			There are no farmlands, prime or unique, in the proximity of the proposed project area.
	Range Management	5/23/13	SC	
	Recreation			
NP	Special Designations (ACECs and SMAs etc)			There are no Areas of Critical Environmental Concern in the proximity of the proposed project area.
	Lands/ Realty Authorizations			

NP	Wild and Scenic Rivers			There are no Wild and Scenic Rivers in the Planning Area. An Eligibility and Suitability study is being completed in the RMP Revision.
NP	Wilderness and Wilderness Characteristics			
<b>PUBLIC LAND HEALTH STANDARDS</b>				
	Soils (Finding on Standard 1)	5/22/13	ND	Finding: Meeting per LHA documentation
	Riparian Systems (Finding on Standard 2)			Finding:
	Plant Communities (Finding on Standard 3)			Finding:
	Wildlife, Aquatic (Finding on Standard 3)			Finding:
	Wildlife, Terrestrial (Finding on Standard 3)			Finding: Project would help meet or improve.
	Threatened or Endangered Species (Finding on Standard 4)			Finding: No change. None present, no impact.
	Water Quality Surface\Ground (Finding on Standard 5)	5/22/13	ND	Finding: Meeting per LHA documentation and State 303d listings
<b>OTHER ELEMENTS</b>				

## APPENDIX 2

### Additional Cultural Protective/Mitigation Measures

A Class III field inventory of the Area of Potential Effect, as defined in the National Historic Preservation Act (NHPA), would be conducted prior to implementation of a mechanical alternative to ensure the project is in compliance with the NHPA, the Colorado State Protocol Agreement, and other federal law, regulation, policy, and guidelines regarding cultural resources. Historic properties identified by that survey and recommended as eligible for the National Register of Historic Places would be excluded from the treatment area and therefore avoided. If vegetation objectives or fuel reduction parameters require the removal of plants within the boundary of eligible historic properties the vegetation would be hand cut and hand removed from the site area which would have a negligible disturbance to the surface and subsurface. Stipulations also include:

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 would determine the actions that would 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)).

The operator may relocate activities to avoid the expense of mitigation and delays associated with this process, as long as the new area has been appropriately inventoried and has no resource concerns, and the exposed materials are recorded and stabilized. Otherwise, the operator shall be responsible for mitigation costs. The BLM authorized officer would provide technical and procedural guidelines for relocation and/or to conduct mitigation. Upon verification from the BLM authorized officer that the required mitigation has been completed, the operator would be allowed to resume construction.

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
GRAND JUNCTION FIELD OFFICE  
**FINDING OF NO SIGNIFICANT IMPACT**

Colorado Book Cliffs Restoration Project  
**DOI-BLM-CO-130 2012-0048-EA**

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the Proposed Action would not have a significant effect on the human environment. An environmental impact statement is therefore not required.

**BACKGROUND**

A priority of the National Fire plan is to address the increase in fuel loading present on public lands due to past fire suppression policies. This buildup of fuels increases the intensity of wildfires, which can lead to severe impacts to soils, wildlife, micro-organisms and other natural resources. The Colorado Bookcliffs Restoration Project would reduce fuels, while improving vegetative conditions and wildlife habitat, to comply with the National Fire Plan directives and the GJFMP.

The Bureau of Land Management prepared an Environmental Assessment which analyzed the effects of 43,159 acres of mechanical, prescribed and natural occurring fire treatment located in the Book Cliff Region northwest of Grand Junction. The EA considered a Proposed Action Alternative and No Action Alternative. Scoping was completed by posting this project on the Grand Junction Field Office NEPA website and letters were also sent to local residences to identify any issues. No issues were identified during public scoping.

**Intensity**

I have considered the potential intensity/severity of the impacts anticipated from the Colorado Bookcliffs Restoration Project decision relative to each of the ten areas suggested for consideration by the CEQ. With regard to each:

- 1. *Impacts that may be both beneficial and adverse.*** This project may have minor short term impacts to soils, vegetation, and wildlife; however these impacts are not significant. This project would have a long term net benefit in improving wildlife habitat.
- 2. *The degree to which the proposed action affects public health and safety.*** The proposed action is not expected to impact public health and safety.
- 3. *Unique characteristics of the geographic area such as proximity of historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.***

There are no significant impacts to riparian vegetation, parklands, prime farmlands, wetlands, or wild and scenic rivers within the project area. The project has been modified to avoid impacts to cultural and historic resources.

***4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.***

The impacts of vegetation treatments are generally well known and documented in the academic and practicing communities. Therefore the environmental effects are not likely to be controversial.

***5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.***

Vegetation treatments have a history in the region and pose no unique or unknown risks.

***6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.***

This fuels treatment project is like one of many that have previously been completed and will continue to be completed by BLM for vegetation treatments on public lands. The proposed project is within the scope of the Resource Management Plan and is not expected to establish a precedent for future actions. The decision that needs to be made for this project does not represent a decision in principle about a future consideration.

***7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.***

There are no significant cumulative effects on the environment, either when combined with the effects created by past and concurrent projects, or when combined with the effects from natural changes taking place in the environment or from reasonably foreseeable future projects.

***8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.*** There would be no adverse impacts to the above resources. The project has been modified to avoid impacts to cultural and historic resources.

***9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*** No impacts are expected to endangered or threatened species or their designated critical habitats.

***10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*** This decision complies with other Federal, State, or local laws and requirements imposed for the protection of the environment.

**FINDING OF NO SIGNIFICANT IMPACT**

On the basis of the information contained in the EA, and all other information available to me, it is my determination that: 1) the implementation of the Proposed Action or alternatives will not have significant environmental impacts beyond those already addressed in the "Record of

Decision and Resource Management Plan," (January 1987) (2) the Proposed Action is in conformance with the Resource Management Plan; and (3) the Proposed Action does not constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.

This finding is based on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR '1508.27), both with regard to the context and to the intensity of the impacts described in the EA.

Katui A. Stern

6/29/2013

Date

Field Manager  
Grand Junction Field Office

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
GRAND JUNCTION FIELD OFFICE

**DECISION RECORD**  
Colorado Book Cliffs Restoration Project  
**DOI-BLM-CO-130-2012-0048-EA**

DECISION: It is my decision to authorize the Proposed Action as described in the attached EA. The Proposed Action is to treat and seed approximately 166 acres with a hydro-ax or similar type of equipment. Seeding would be accomplished concurrently by using an attached broadcast seeder. The proposed action would also include optional follow up treatments for up to ten years following initial treatment. Follow up treatments may utilize chainsaw thinning and or chipping for ecosystem maintenance.

This decision is contingent on meeting all mitigation measures and monitoring requirements listed below.

Scoping, by posting this project on the Grand Junction Field Office NEPA website, was the primary mechanism used by the BLM to initially identify issues. Private landowners that would be potentially affected were notified of the proposal. No comments were received.

MITIGATION MEASURES\MONITORING:

1. Locate, flag, and protect any survey monuments (brass cap monuments, bearing trees, private monuments) that may exist in this project area.
2. Areas to be avoided by equipment to protect other resource values would be flagged prior to project implementation and their location reviewed as part of the pre-work conference with the contractor.
3. To prevent the spread of noxious weeds equipment would be cleaned through established procedures as part of the contract Statement of Work.
4. Fueling of machinery and storage of fuel would be accomplished through established procedures as part of the contract Statement of Work.
5. Determine boundaries of the treatment areas near private lands prior to fuel reduction to avoid treatment of private lands.

6. Existing roads and trails would be used by agency and contractor personnel to eliminate development of new routes and trails. When driving off roads, personnel would avoid repeatedly driving back and forth via the same route.
7. To reduce visual impacts avoid cutting or clearing areas along straight lines, using natural vegetation patterns where possible.
8. Schedule project work between July 15<sup>th</sup> and May 15<sup>th</sup>, which will comply with measures to protect species identified by the Migratory Bird Treaty Act.
9. Seed mix would be tested as certified to prevent the introduction of noxious weed species.
10. The edge of all treatment areas would be undulating or feathered to leave pockets of vegetation in place in closer proximity to any nearby creeks.
11. Coordinate with the wildlife biologist and Colorado Department of Parks and Wildlife to best determine timing and operation procedures to limit any possible wildlife issues.
12. Right-of-way holders will be notified, and all road, utility, oil and gas, and other authorized facilities will be located prior to commencement of the project to assure that no damage will occur.
13. Conduct only hand thinning within 50 feet of perennial waters.
14. Buffer perennial streams and springs from prescribed fire by a minimum distance of 100 feet when adjacent hill slopes are 40 percent or less and a minimum of 200 feet when adjacent hill slopes are 40 percent or greater.
15. A class III Cultural field inventory will be conducted in specific project areas prior to mechanical implementation. Additional cultural protective/mitigation measures are listed in Appendix 2.

RATIONALE: I have decided to implement this project because it would meet the purpose and need to reduce fuel loadings to protect the watershed. An EA was prepared for this project and we found that no significant impacts would result.

PROTEST/APPEALS:

This decision shall take effect immediately upon the date it is signed by the Authorized Officer, and shall remain in effect while any appeal is pending unless the Interior Board of Land Appeals issues a stay (43 CFR 2801.10(b)). Any appeal of this decision must follow the procedures set forth in 43 CFR Part 4. Within 30 days of the decision, a notice of appeal must be filed in the office of the Authorized Officer at Grand Junction Field Office, 2815 H Road, Grand Junction, Colorado, 81506. If a statement of reasons for the appeal is not included with the notice, it must be filed with the Interior Board of Land Appeals, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203 within 30 days after the notice of appeal is filed with the Authorized Officer.

NAME OF PREPARER: Jeff Phillips

NAME OF ENVIRONMENTAL COORDINATOR: Christina Stark

DATE: 6/29/2013

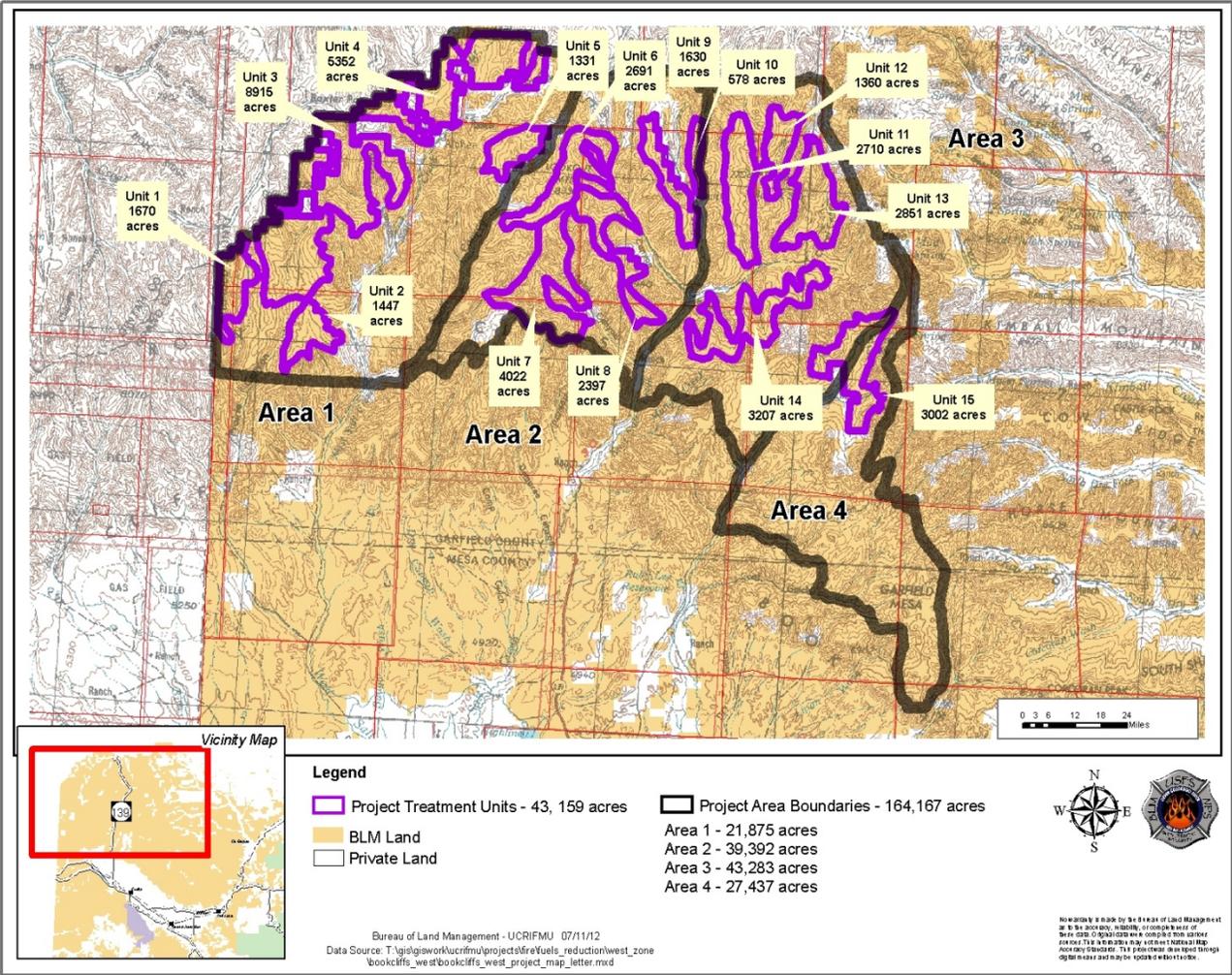
SIGNATURE OF AUTHORIZED OFFICIAL:

  
\_\_\_\_\_  
Field Manager  
Grand Junction Field Office

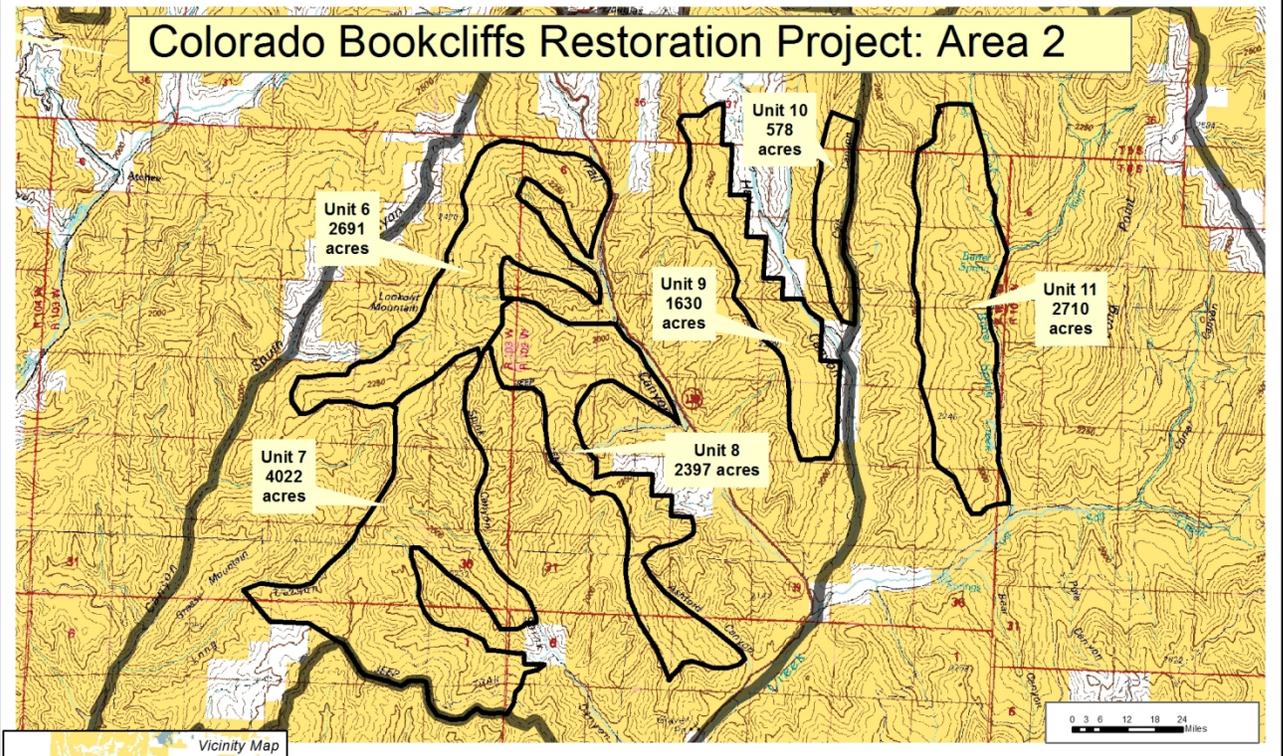
DATE SIGNED: 7/9/2013

ATTACHMENTS:

- 1) Project Maps



# Colorado Bookcliffs Restoration Project: Area 2



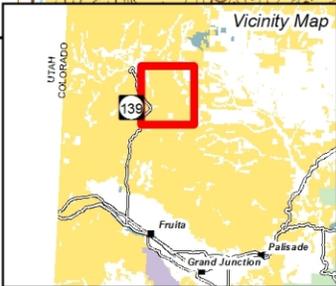
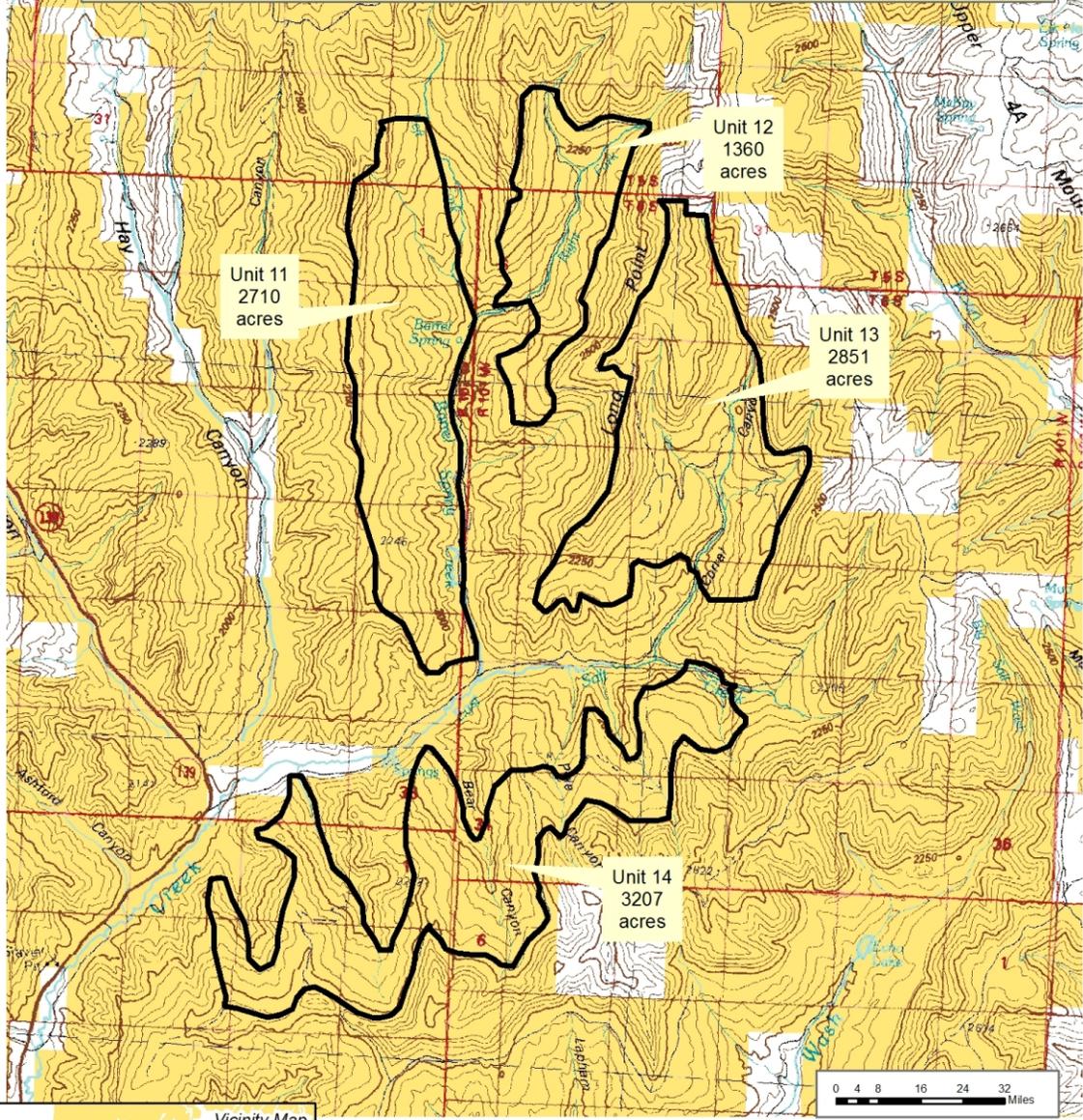
- Legend**
- Project Treatment Units
  - BLM Land
  - Private Land



Bureau of Land Management - UCRIFMU 05/30/12  
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# Colorado Bookcliffs Restoration Project: Area 3



- Legend**
- Project Treatment Units
  - BLM Land
  - Private Land

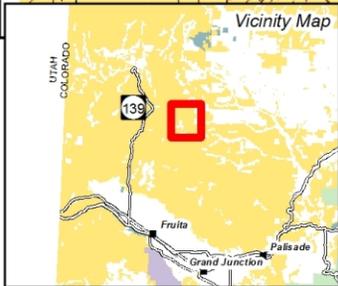
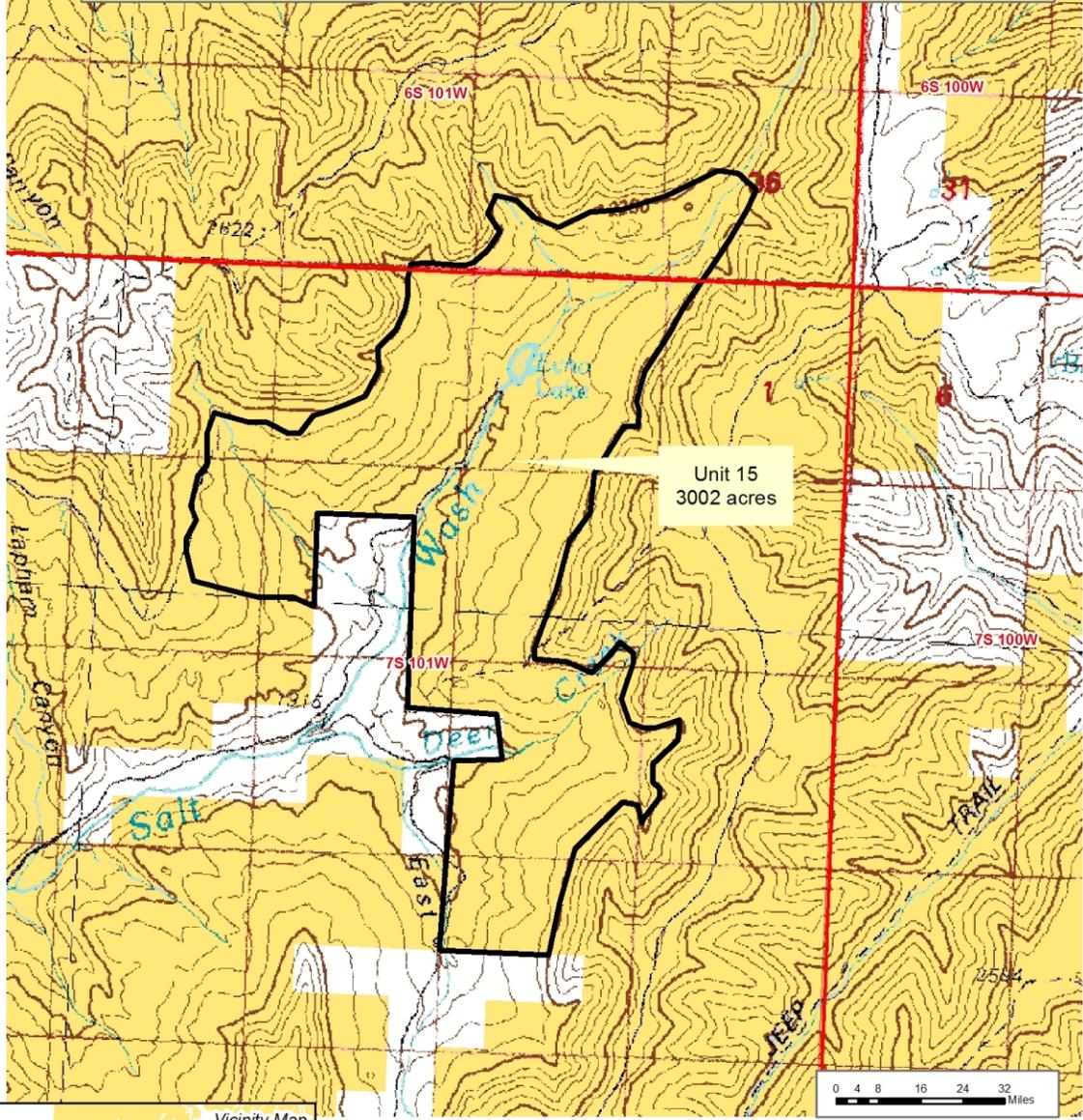


Bureau of Land Management - UCRIFMU 03/22/13

Document Path: T:\CO\GIS\giswork\orfm\projects\fire\units\_projects\west\_zone\bookcliffs\westbookcliffs\_restoration\_area3\_map.mxd

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# Colorado Bookcliffs Restoration Project: Area 4



### Legend

-  Project Treatment Units
-  BLM Land
-  Private Land



Bureau of Land Management - UCRIFMU 03/22/13

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