United States Department of the Interior
Bureau of Land Management

(Draft) Environmental Assessment

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March 2024

Escalante Valley Habitat Restoration EA

Location: Iron County, Utah

BLM Utah, Color Country District, Cedar City Field Office

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CHAPTER 1. INTRODUCTION

1.1 INTRODUCTION

The Bureau of Land Management (BLM) Cedar City Field Office (CCFO) is proposing the Escalante Valley Habitat Restoration Treatment Project (project), which includes three proposed areas within Escalante Valley. These are: the Newcastle Project Area which consists of 520 acres of lower elevation area, a 246-acre upper elevation area, and 4,531 acres of the Wood West Project Area. Altogether approximately 5,297 acres of BLM managed land in Iron County, west of Cedar City, Utah are proposed for treatment within this project.

The goals of the proposed project are to:

- Reduce hazardous fuel loading and wildfire risk.
- Limit the expansion and dominance of juniper, old decadent[1] sagebrush stands and invasive species.
- Maintain or improve soil site stability, hydrologic function, biological integrity, and ecosystem resiliency.
- Create more resilient rangelands.

The objectives of the project include:

- Thinning juniper to promote herbaceous understory in pinyon-juniper sites.
- Increasing perennial plant cover and diversity.
- Restoring old, decadent sagebrush stands by recruiting young healthy sagebrush and increasing perennial grasses and forbs.
- Restoring winterfat *(Krascheninnikovia lanata)* vegetation sites by planting winterfat *(Krascheninnikovia lanata)* in areas that have become dominated by old decadent sagebrush or annual grasses and increasing perennial grasses and forbs.

1.2 BACKGROUND

The 520-acre New Castle Project Area within the proposed project area was originally treated in 2004. The previous treatment provided a direct benefit to the sagebrush habitat. However, additional treatments are needed to further reduce wildfire risk as well as improve ecological health, which would result in a more resilient landscape within the project area.

Within the project areas, the vegetative community is predominantly Wyoming big sagebrush (*Artemisia tridentata*) with limited perennial grasses (i.e., bottle brush squirrel tail *(Elymus elymoides)*, Indian ricegrass *(Achnatherum hymenoides),* needle and thread grass *(Hesperostipa comata)*, galleta grass *(Pleuraphis jamesii))*. Successive years of drought, fire suppression, historic grazing, and invasive annual species, have resulted in fewer forbs and grasses within the understory of the existing sagebrush/juniper sites. Within the project sites, sagebrush stands are old and have reached a threshold showing some decadence. The lack of herbaceous perennial

[1] Decadent: An ecosystem that is declining in health and biodiversity due to a lack of disturbance is considered decadent.

understory and increase of annual cheatgrass *(Bromus tectorum)*moving into sagebrush sites has a greater potential for high intensity fire and creates an environment favorable to short- term fire cycle intervals once a site becomes completely dominated by cheatgrass.

Invasion of cheatgrass has led to a grass-fire cycle in which the increasing percentages of cheatgrass that are present promote larger wildfires that then allow cheatgrass monocultures to further establish after a wildfire. Portions of the project area are experiencing a contradictory effect of the grass-fire cycle due to years of fire suppression and lack of perennial grasses/forbs. A side effect of suppression activities and lack of perennial grasses and forbs has been the creation of large bare earth gaps between sagebrush species which has interrupted the natural fire cycle and has resulted in ecological sites completely absent of any functional perennial grass/forb component that would normally be present within the ecological site descriptions.

In some sites within the Wood West Project Area, fire has been reduced or excluded due to the loss of fine fuels. This loss is mostly a result of historic overuse by livestock, landscape fragmentation, and intentional fire suppression[2]. Degraded sagebrush and historical winterfat *(Krascheninnikovia lanata)* habitat can be improved by creating ground disturbance and reseeding with select perennial species to recruit new sagebrush growth while simultaneously increasing perennial grass and forb production. This approach reduces the risk of catastrophic wildfire, preserves sagebrush *(Artemesia tridentata, Artemesia nova)*, winterfat *(Krascheninnikovia lanata)* habitat, and promotes resilient rangelands which is defined as *"... the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks."*[3]

1.2.1 Sagebrush Steppe/Juniper Restoration

The proposed project area is within the Escalante Valley geographic area northwest of Beryl Junction and south of the town of Newcastle in Iron County, Utah. These areas are outside of any current or historical Greater Sage-Grouse habitat and consists of a mixture of sagebrush steppe habitat. The project area has experienced a change in the historic composition of the sagebrush community at lower elevation sites, including an increased variety of non-native plants. The most common non-native plant in the project area is cheatgrass, an annual grass that is beginning to become the dominant herbaceous understory species within the Wood West Project Area. The Wood West Project Area has maintained sagebrush steppe plant species but does not have the desired combination or quantity to be considered resilient rangelands.

The New Castle Project Area has seen an increase of pinyon-juniper encroachment at elevations ranging from 5,100 ft to 6,100 ft, and is lacking herbaceous understory within the pinyon-juniper sites that should be present. This is due to a lack of natural disturbance from years of fire suppression within the area. These areas have reached a vegetative state that without substantial external inputs to the system cannot be reversed. For this project these inputs would consist of a

[2] Wildlife Society Bulletin (1973-2006)
[3] Ecology and Society, Dec 2004.

variety of vegetation treatments to be able to reverse the threshold to the desired vegetation of perennial grasses forbs and shrubs that should be present to maintain proper grazing practices, control invasive species and improve mule deer habitat. The upper-elevation sites would consist of opening small pockets of juniper stands through mastication or hand cutting juniper trees and re-seeding these areas with a perennial grass, forb, and shrub mix. These pockets will be approximately 30–openings and would follow the design features located in (Appendix A) to reduce adverse impacts or undue degradation of the land. The lower elevation sites that have been previously treated will be focused on annual cheatgrass control and decadent sagebrush treatments to create a more resilient landscape by utilizing management tools listed in the Proposed Action for the New Castle Area, Lower Elevation sites (Section 2.3 and Table 6).

(Project Maps begin on the next page)

Figure 1- Wood West Project Area

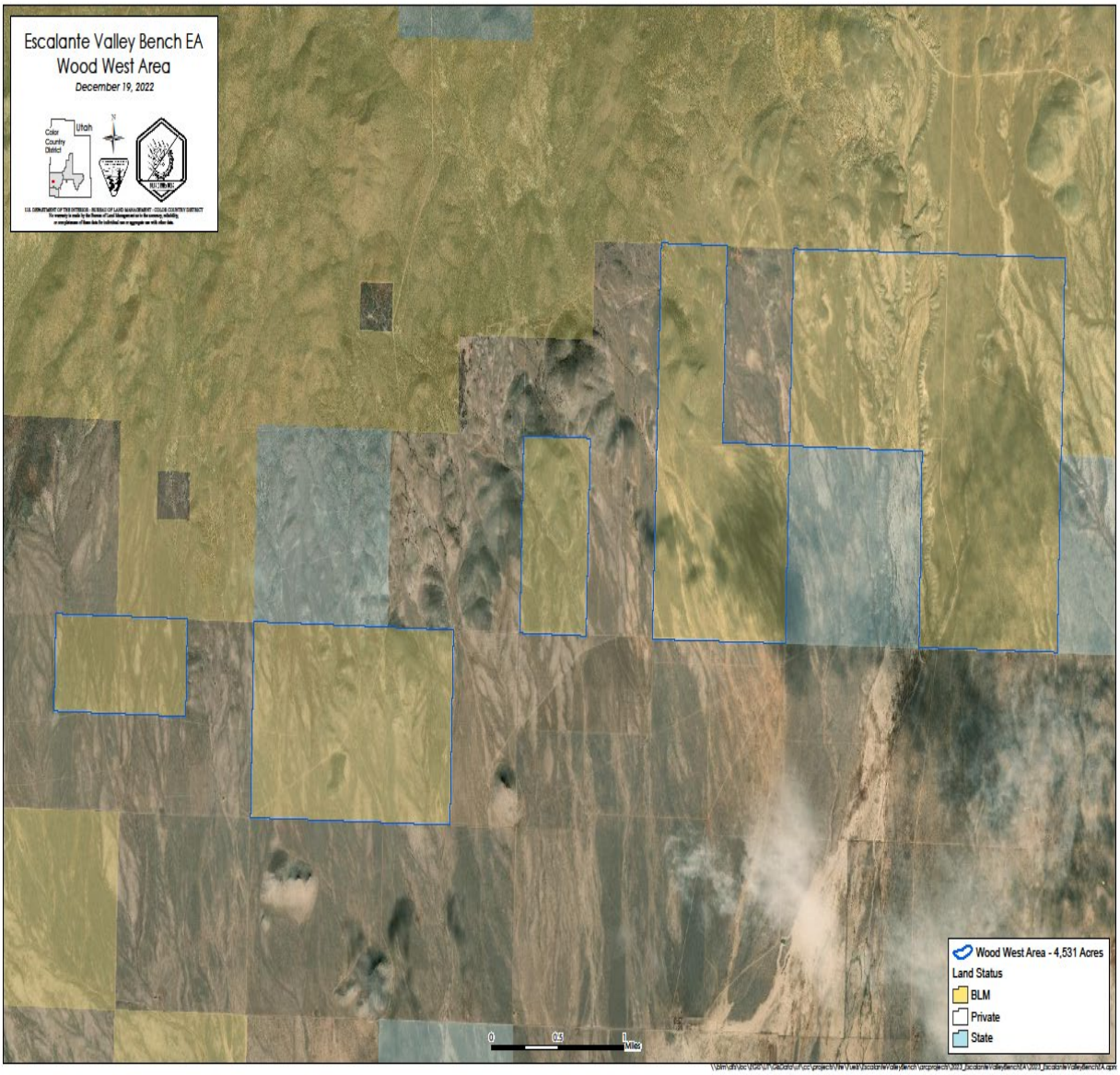


Figure 2- Newcastle Project Area

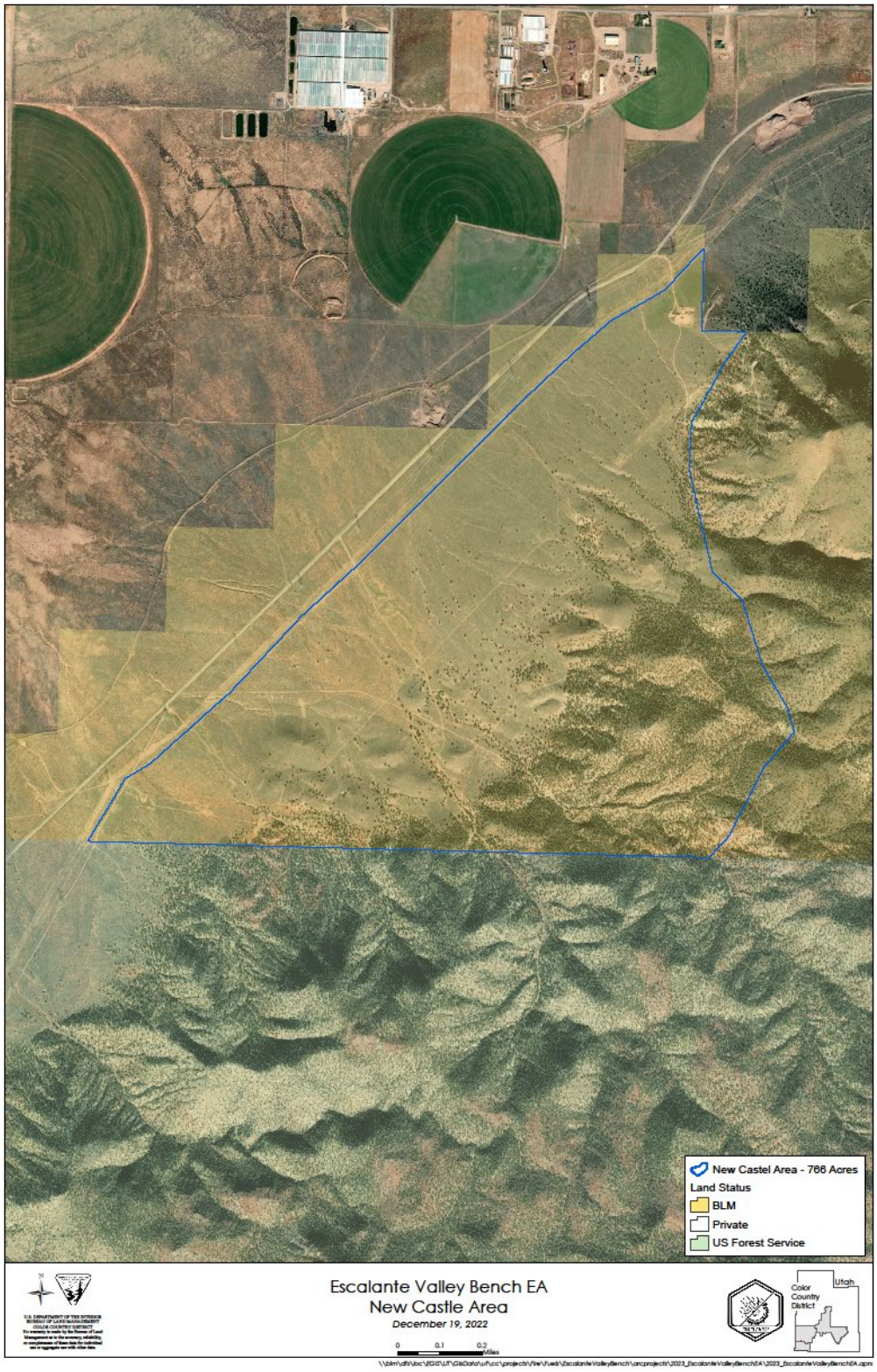
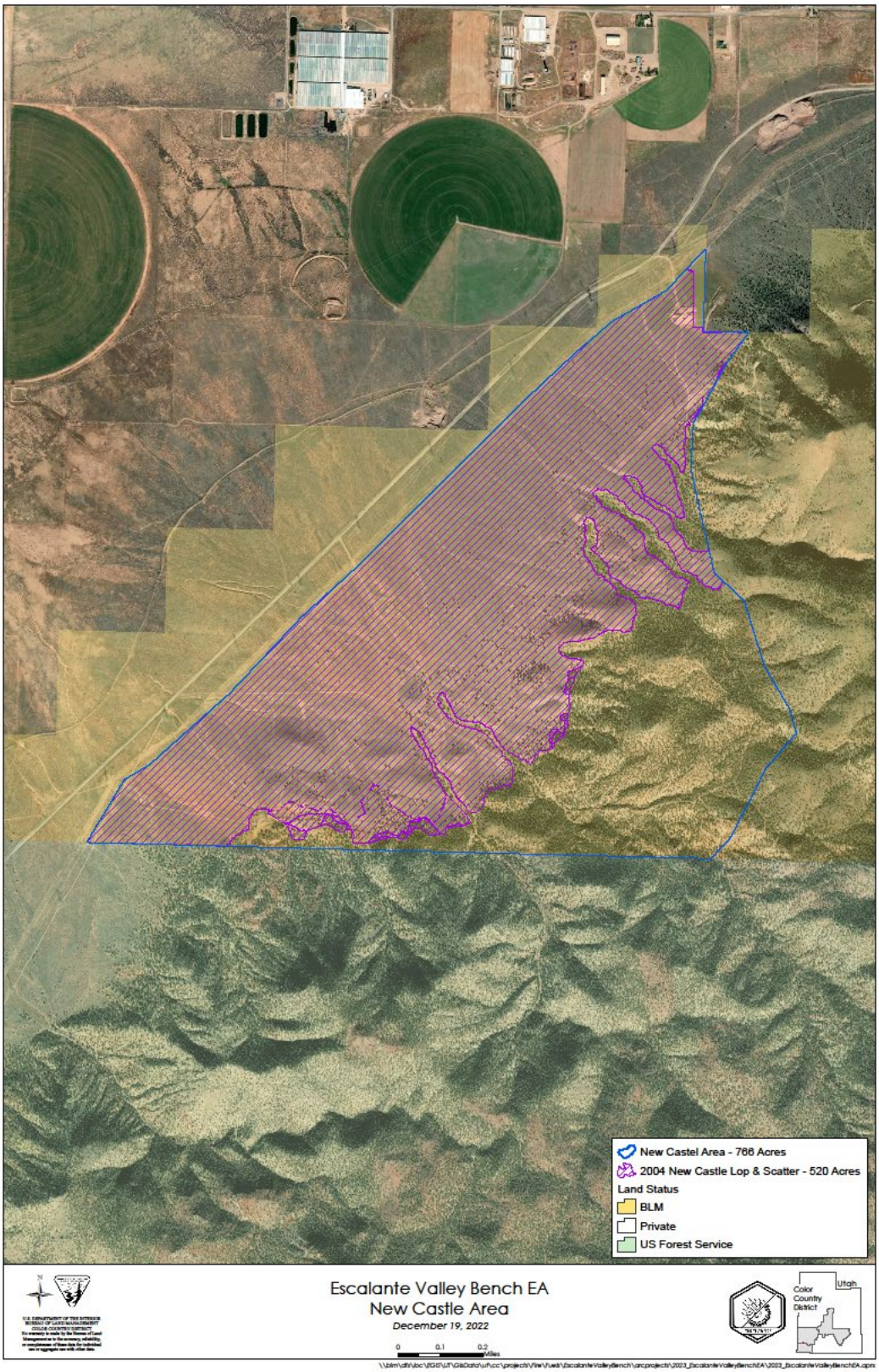


Figure 3- Newcastle Project Area/2004 Treated Area



1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

Due to the factors described in section 1.2, the BLM CCFO proposes to utilize vegetation treatments to decrease the risk of high severity wildfire, interrupt the short interval fire cycles in cheatgrass dominant areas, restore ecosystem function, create resilient rangelands, and to increase, improve, and protect sagebrush habitat in the project area as outlined in the project goals and objectives outlined in section 1.1.

The purpose of the Proposed Action is to utilize a variety of resource management tools (described in section 2.3) to restore, improve, and maintain suitable and functional sagebrush *(Artemesia tridentata, Artemesia nova) and* winterfat *(Krascheninnikovia lanata)* habitat. The need for the Proposed Action objectives would be to reduce fuel loading, prevent short fire cycle intervals and limit the expansion and dominance of juniper, old decadent sagebrush stands and invasive species; maintain improve soil site stability, hydrologic function, biological integrity, and rangeland resilience.

1.4 CONFORMANCE WITH BLM LAND USE PLAN

The Proposed Action is subject to the Pinyon Management Framework Plan (PMFP), approved in June 1983 and the Cedar, Beaver, Garfield, Antimony Resource Management Plan (CBGA), approved in October 1986. The Proposed Action conforms to wildlife, range, and wildfire objectives. It has been determined that the Proposed Action and alternative would not conflict with other decisions in the plan.

1.4.1 Wildlife

- CBGA-Objective: Manage wildlife habitat to favor a diversity of game and nongame species. Provide forage for current big game numbers and prior stable or long-term number in the future should population increase, and habitat improvement occur. Improve habitat in poor condition on crucial deer winter range to reduce depredation on private lands. Protect against the loss of crucial big game habitat from encroachment by incompatible uses. (CBGA, Pg. 69)

- PMFP-Objective: Improve wildlife habitat to reach estimated prior stable numbers, mule deer (2,467 head in winter and 2,219 summer); antelope (1,071 head); elk (200 head). Increase upland game bird numbers in relation to their habitat potential. (PMFP-Objective, Pg.115)

1.4.2 Range

- CBGA-Objective: Continue current management on all allotments identified for custodial management (Range Table 3) while preventing further resource deterioration. (CBGA, Pg. 109)

- CBGA-Objective: Maintain or improve current resource conditions on all identified for maintenance of current management allotments while permitting approximately 23,000 AUMS of livestock grazing use over the long term. (CBGA, Pg. 109)

- PMFP-Objective: On 31 allotments with significant forage production resource conflicts, protect and improve 379,277 acres of suitable, 49,170 acres of limited suitable, 241,793 acres of potentially suitable, and 26,581 acres on unsuitable public rangelands within the contest of balanced use and sustained yield. Resolve forage resource conflicts by increasing forage production to total grazing preference. Through intensive grazing management over the appropriate timeframe. Increase forage production of 31,799 AUMs by 7,783 AUMs to achieve the allotment's natural potentials of 39, 582 AUMs. Through land treatment projects, increase production by 15,650 AUMs to achieve these allotments total preference of 55,232 AUMs. Range improvements, including land treatments will achieve the most cost-effective use of public funds in improving rangeland productivity. Monitoring studies will be established or continued an appropriate schedule and of an appropriate intensity. (PMFP, Pg.14)

1.4.3 Wildfire

- PMFP-Objective: Allow alternatives to full fire suppression in areas within the planning unit where resource values are low or where fire may be a positive factor in vegetation change. (PMFP, Pg.211)

1.5 TIERING TO OTHER NEPA DECISIONS

The Proposed Action is tiered to BLM's Final Programmatic Environmental Report (PER): Habitat restorations on BLM Lands in 17 Western States Programmatic Environmental Report, June 2007 and Habitat restorations Using Herbicides on BLM managed lands in 17 Western States Programmatic Environmental Impact Statement (PEIS), June 2007. The Proposed Action is also tiered to the Fuels Reduction and Rangeland Restoration in the Great Basin PEIS signed January 14, 2021.

- These decisions document the environmental consequences of vegetation treatments and herbicide use on BLM managed lands in the 17 western states and the Great Basin and established mitigation measures and design features to minimize or eliminate environmental effects. The Proposed Action incorporates mitigation measures, design features, and conservation measures from these decisions.

1.6 RELATIONSHIPS TO STATUTES, REGULATIONS AND OTHER PLANS

The Proposed Action is consistent with federal, state, and local laws, regulations, and enforceable plans, including the following:

- Federal Land Policy and Management Act of 1976
- Public Rangelands Improvement Act of 1978
- Title 54 U.S.C. § 306108 (Section 106 of the National Historic Preservation Act)

- Best Management Practices for Raptors and Their Associated Habitats in Utah (IM: 2006-096)
- Utah's Standards for Rangeland Health
- Endangered Species Act 1973
- Migratory Bird Treaty Act 1918
- National Trail Systems Act of 1968 (P.L. 90-543) as amended through P.L. 116-9, March 12, 2019.
- Old Spanish National Historic Trail Comprehensive Administrative Strategy (2017)

BLM Manual 6280–Management of National Scenic and Historic Trails requires that an inventory of the Federal Protection Components (resources, qualities, values, associated settings, recreational users and uses and natural resources) of the trail are identified and the impacts to these components identified for any Proposed Action.

Secretarial Order No. 3336 *Rangeland Fire Prevention, Management and Restoration* (USDI 2015), sets forth policies and strategies for preventing and suppressing rangeland fire and for restoring sagebrush landscapes impacted by fire across the western United States.

1.7 IDENTIFICATION OF ISSUES

Resources which might be affected through the Proposed Action or through the no action alternative were considered by an interdisciplinary team (Appendix B). The development of the Proposed Action and this Environmental Assessment has occurred internally through BLM staff and coordination with the Utah Division of Wildlife Resources (UDWR), Natural Resource Conservation Service (NRCS) and livestock permittees.

Table 1- Issues Analyzed in Detail

Resource	Issue
Soils	How would ground disturbance affect erosion and soil compaction?
Vegetation	How would habitat improvement treatments increase herbaceous species cover and diversity?
Woodlands and Forestry	How would removal of vegetation affect woodlands and forestry?
Rangeland Health Standards	RLH Standards directly correlate to the Soils and Vegetation sections analyzed in detail in Chapter 3. (See Interdisciplinary Team Checklist in Appendix B)
Migratory Birds	How would migratory birds and their habitats be impacted by the proposed Escalante Valley Habitat Restoration project?
Big Game	How will implementation of the Proposed Action alternative affect big game winter range (i.e., what are the impacts to wintering mule deer)

Table 2- Issues Identified but Dismissed from Further Analysis

Resource	Issue
National Historic Trials	How would the habitat improvement project affect the scenic values of the National Historic Spanish Trail?
Noxious Weeds	How would the habitat improvement project affect the spread of currently present and new populations of noxious weeds?
ESA- listed threatened, endangered, and candidate Wildlife Species	How would ESA-listed threatened, endangered, and candidate wildlife species and their habitats be impacted from implementation of the project actions?

The following resource sections include the rationale for dismissal from further analysis within this document:

1.7.1 National Historic Trails: How would the habitat improvement project affect the scenic values of the Old Spanish National Historic Trail (OSNHT)?

The Proposed Action would not affect any trail traces, as none are evident in the area. The impacts would be to the scenic values and the setting which contribute to the quality of the recreation experience of those following the National Historic Trail (NHT) trail route. The vicarious setting of this segment is currently impaired by large transmission lines, though is enhanced by the interpretive panel and silhouettes in this same segment. Impacts from the vegetation treatment are short-term (3 to 5 years), visitors would notice the evidence of the habitat restoration, especially during active tree removal.

The resources, qualities, values, associated settings and primary use or uses of the trail would not be impacted to a degree that would change the nature and purpose of the OSNHT. The Proposed Action would mostly affect the viewshed, predominantly by those using the Auto Route for the short term. The casual observer traversing the route would still be able to experience the same quality vicarious experience that currently exists as only the natural setting would be altered for a short time. Habitat improvements would be designed to provide a mosaic pattern similar to a wildfire; therefore, there would be no hard edges that would be visible. Long-term treatments would look natural to the casual observer.

1.7.2 Noxious Weeds: How would the habitat improvement project affect the spread of currently present and new populations of noxious weeds?

During project implementation there is potential to further spread Scotch Thistle *(Onopordum acanthium L.)* that has been mapped within the Newcastle Project Area (see Figure 1). The CCFO has an active noxious weed program. If the design features in Appendix A are followed, the spread of existing and potential noxious weeds into the proposed project area can be managed with the CCFO current noxious weed program. Design features will include monitoring

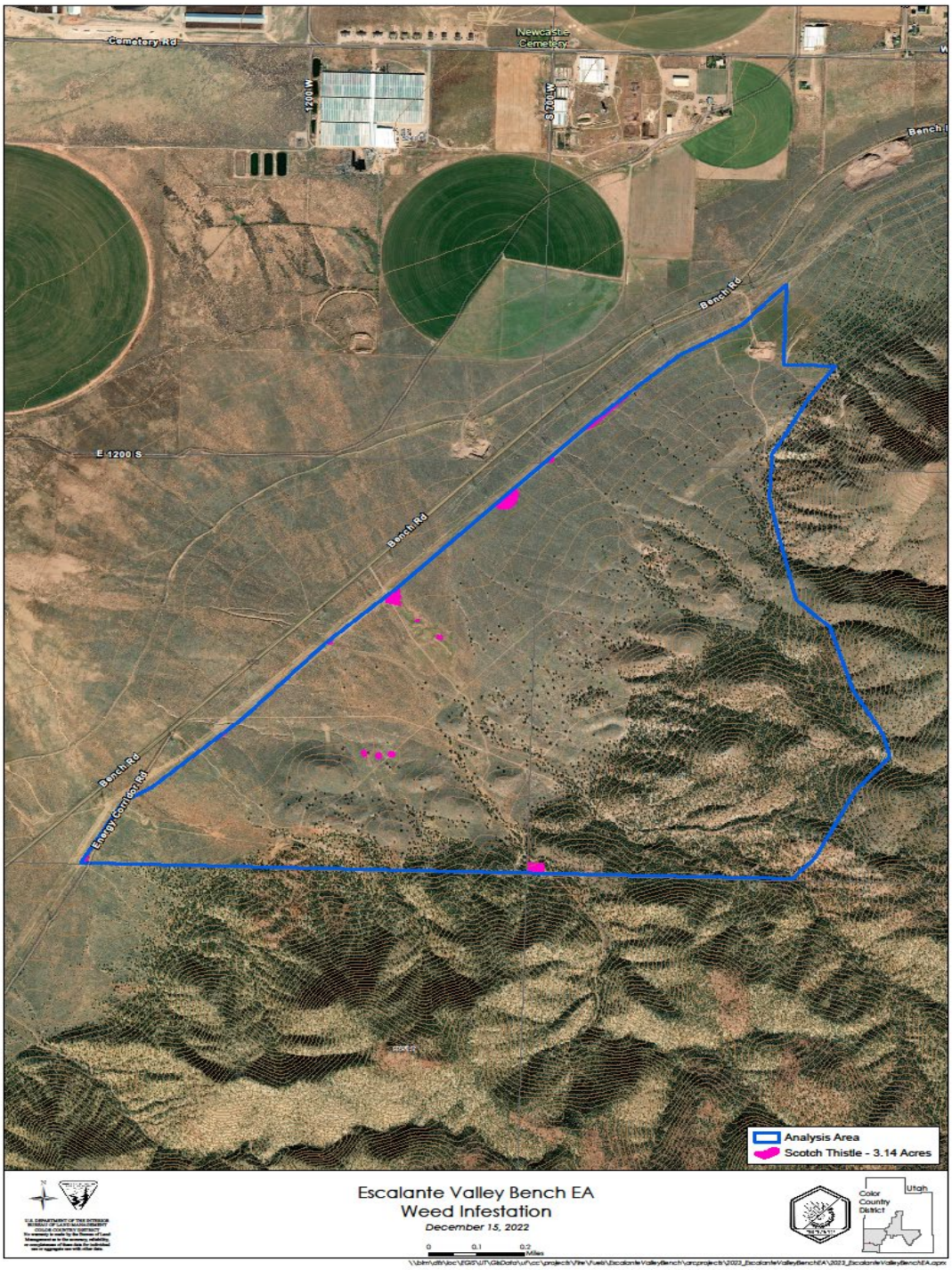
for noxious weeds and hand treating or avoiding as needed during project implementation. Noxious weed infestations are spread in part by the movement of vehicles, humans, animal (including livestock), through the transport of seed through physical contact and/or ingestion. The currently known small, isolated noxious weed infestations will continue to be reduced in the future through the continuation of the noxious weed program which is currently being implemented by the CCFO.

1.7.3 Endangered Species Act (ESA)- listed threatened, endangered, and candidate Wildlife Species: How would the use of herbicides affect Monarch butterfly populations and its candidate designation?

Monarch Butterfly is a candidate species that has the potential to occur within the proposed project area. It is recommended that the BLM follow the mitigation measures found in Western Monarch Butterfly Conservation Recommendations by protecting milkweed species for breeding and herbicide application timing.[4] No impact to Monarch Butterfly populations would occur by following the prescribed recommendations from the Western Monarch Butterfly Conservation Recommendations and adhering to Best Management Practices located in Appendix C.

[4] USFWS, 2021

Figure 4- Newcastle Area Weed Infestation Map



CHAPTER 2. PROPOSED ACTION AND NO ACTION ALTERNATIVES

2.1 INTRODUCTION

This EA document focuses on the Proposed Action and No Action alternative. No other alternatives have been proposed which would sufficiently meet the purpose and need for the action. The No Action is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action.

2.2 ALTERNATIVES CONSIDERED

Under the No Action alternative, habitat improvement projects within the project area as defined in the Proposed Action (section 2.3) would not occur. The project area would remain as described in Chapter 3, which describes the existing condition for each impacted resource within the project area. Under the No Action alternative, the Proposed Action would not be adopted, and the impacts associated with the Proposed Action would not occur. Vegetation conditions would continue to be managed under current BLM direction on BLM managed public land.

2.3 PROPOSED ACTION

The Proposed Action is to utilize a variety of resource management tools to (see Table 3, Table 4, and Table 5) limit the expansion and dominance of juniper, old decadent sagebrush stands and invasive species. The proposed action also seeks to reduce hazardous fuel loading and wildfire risk, maintain, or improve soil site stability, hydrologic function, biological integrity, and ecosystem resiliency and create more resilient rangelands. The project areas total approximately 5,297 acres of BLM managed lands in the Escalante Valley Project area (See Figure 1, Figure 2, and Figure 3). The Proposed Action would be accomplished through treating old sagebrush *(Artemisia tridentata)*, *(Artemisia nova)* stands, annual invasive grasses *(Bromus Tectorum)* and encroaching juniper (*Juniperus osteosperma)* trees. Old growth tree stands, and pinyon trees would not be targeted within this project. Project work would be followed by reseeding with perennial grasses, forbs, and shrubs using either seed drills or broadcast seeding methods described in the below tables.

Table 3- Mechanical Resource Management Tools[5]

Equipment	Description
Ely-anchor chain	Anchor chain weighing 40 to 160 lb. per link, 90 to 350 ft long, with steel bars or railroad rails welded perpendicular to chain links.
Harrow	Spiked pipes trailed behind a spreader bar. Pipes are attached to spreader bar by swivels at equal intervals along bar.

[5] Monsen Steven B, Stevens Richard. 2004.

Seed Drills/Broadcast Seeders	Seeding methods would include drills which can include drag pipes, and depth bands or broadcast seeding methods that broadcast seed through blower or rotary spreader methods. This can be applied on the ground or aerially.
Bullhog	Typically, a rotary head used on an excavator or front loader that crushes and chops woody vegetation into small fragments.
Mowing	A rotary blade attachment that is typically used to cut down small woody vegetation, such as sagebrush, at the base.

Table 4- Chemical Resource Management Tools[6]

Chemical	Description
Glyphosate (Roundup)	Used in brush control but also kills desirable grasses and forbs. Used to kill all types of foliage Including undesirable grasses such as cheatgrass. Persists 1 to 3 weeks in soil. May be applied selectively. Will be applied to control rabbitbrush.
Imazapyr (Plateau)	Used as a post-emergent herbicide that will be applied to control cheatgrass.
Tebuthiuron (Spike)	Used for controlling woody plants. Persists up to several months. Spot application for broadcast as pellets. Selective at 0.5lb/acre rate or when high rates applied selectively. Will be applied to control sagebrush.
Rejuvera[7]	Used to control cheatgrass at the germination level. Can protect rangelands for up to four years so that desirable vegetation can re-establish.

Table 5- Seeding or Hand planting/Hand Thinning Resource Management Tools

Equipment	Description
Hand Planting	Hand planting of tubelings or seedlings can be completed using a dibble bar or shovel. A small hole is dug with a dibble bar or shovel, the tubeling is planted and the hole is covered.
Mechanical Planting	An *auger* can be operated by hand or attached to a tractor and consists of a long, half-round blade attached to a shaft. An auger creates planting holes quickly and consistently. An auger

[6] Monson, Stephen B.; Stevens, Richard; Shaw, Nancy L., Comps. 2004.
[7] Rejuvera would only be utilized as a treatment method once approved for BLM use.

	provides loose soil at the bottom of the hole, which allows roots to quickly establish.
Lop and Scatter	Used to cut down juniper and pinyon trees. This method is done with chainsaws and consists of cutting the trees into small sections and scattering to avoid piling of material which will help with the decomposition of woody material over time.

Ecological Site Descriptions and soil surveys have been utilized to identify treatment opportunities. Hand thinning is used in areas where the understory in still intact and seeding is not needed. Areas within the treatment that are mechanically treated will require seeding because the understory grasses, forbs, and shrubs (See Table 7 and 8, Seed Mixes) are limited. Soil disturbance is desired when seeding as it allows the seeds to be buried into the soil to ensure successful germination. Mosaic and "leave" islands would be identified based on resource design features and in coordination with resource specialists (see appendix A). Old growth tree stands, and pinyon would not be targeted as stated in the Proposed Action. Approximately 2,873 acres of the project are focused on sagebrush *(Artemisia tridentata)*, *(Artemisia nova)* communities and 1,733 acres of winterfat *(Krascheninnikovia lanata)* communities where ground disturbance is necessary to promote healthy stands of sagebrush/winterfat and to re-establish perennial grasses and forbs. Approximately 497 acres would occur within Utah juniper (Juniperus osteosperma) and bluebunch wheatgrass *(Pseudoroegneria spicata)* ecological sites. These acres are based on the ecological site descriptions (Table 9 and 10**)** within the project analysis area (See Figure 1 and 2).

The proposed project is anticipated to start in the Fall of 2024 and is anticipated to take approximately 10 years to complete from the time of the first implementation. Implementation of the Proposed Action is dependent upon project funding opportunities. The 10-year project timeline is included to allow for adaptive and progressive management of project work. A variety of the treatment types analyzed in this document would be implemented and monitored to determine success and adapt treatment methods where necessary to improve project success to meet the project goals and objectives outlined in chapter one. If the project duration extends beyond the 10-year period, a Determination of NEPA Adequacy would be completed, if appropriate, to extend the timeline of this project.

See (Table 6) below for a breakdown of treatment type and acres.

Table 6- Treatment Type and Acreage

Project Area	Treatment Type	Existing Treatment (Acres)	New Treatable Acres
Newcastle Project Area- Lower Elevation (Figure 3)	Ely Anchor Chain, Harrow, Mowing, Broadcast seeding, Seed Drills/Broadcast Seeders, Glyphosate, Tebuthiuron, Imazapyr, Rejuvera	520	520 (New treatment type)
Newcastle Project Area- Upper Elevation (Figure 4)	Bullhog, Broadcast Seeding, Hand Planting, Lop and Scatter	0	246
Wood West Project Area (Figure 2)	Ely Anchor Chain, Harrow, Broadcasting seeding, Mowing, Glyphosate, Tebuthiuron, Rejuvera, Imazapyr, Lop and Scatter, Hand Planting, Mechanical Planting	0	4,531
Total			5,297

The Newcastle Upper Elevation Treatment Area (Figure 4) is the only area in which juniper trees would be treated. No trees would be removed within the 520 acres of existing treatment to stay within the Mule Deer Winter Range Habitat Guidelines found in Appendix A. The Wood West Project Area includes sagebrush treatments and does not include Pinyon or Juniper treatments. The Adaptive Management Strategy would be used to monitor treatments and adapt treatment methods within the analysis area to meet the goals and objectives outlined in Chapter 1.

Some areas have intact herbaceous species including perennial grasses (primarily galleta grass *(Pleuraphis jamesii)* and bottlebrush squirreltail *(Elymus elymoides)*), forbs, and shrubs, which would serve as a soil stabilizer following treatment. All mechanical treatment methods and some chemical treatment methods would be seeded with a diverse mix of perennial grasses, forbs, and shrubs to diversify the existing natural seed profile while promoting various age classes of sagebrush in this area (Table 7 and 8) A BLM project inspector would be on site to ensure that adequate desired cover is left in areas of existing stands of sagebrush *(Artemisia tridentata)*, *(Artemisia nova)*/winterfat *(Krascheninnikovia lanata)*.

Table 7- Seed Mix (Newcastle Area)

Common Name	Scientific Name	Pounds/Acre
Bluebunch Wheatgrass	Pseudoroegneria spicata	2.5
Sand Dropseed	Sporobolus cryptandrus	1
Sideoats grama	Bouteloua curtipendula	1
Indian Ricegrass	Achnatherum hymenoides	3
Thickspike Wheatgrass	Elymus lanceolatus	1
Bottlebrush Squirreltail	Elymus elymoides	1
Rocky Mtn. Beeplant	Cleome serrulata	0.1
Palmer Penstemon	Penstemon palmeri	0.5
Showy Goldeneye	Heliomeris multiflora	0.25
Western Yarrow	Achillea millefolium	0.25
Arrowleaf Balsamroot	Balsamorhiza sagittata	0.3
Scarlet Globemallow	Sphaeralcea coccinea	0.1
Wyoming Big Sagebrush	Artemisia tridentata wyomingensis	0.25
Black Sagebrush	Artemisia Nova	0.25
Total Pounds/Acre		11.5

Table 8- Seed Mix (Wood West Project Area)

Common Name	Scientific Name	Pounds/Acre
Bluebunch Wheatgrass	Pseudoroegneria spicata	2.5
Sand Dropseed	Sporobolus cryptandrus	1
Sideoats grama	Bouteloua curtipendula	1
Galleta	Pleuuraphis jamesii	1

Indian Ricegrass	Achnatherum hymenoides	3
Thickspike Wheatgrass	Elymus lanceolatus	1
Bottlebrush Squirreltail	Elymus elymoides	1
Russian Wildrye	Psathyrostachys juncea	1
Rocky Mtn. Beeplant	Cleome serrulata	0.1
Palmer Penstemon	Penstemon palmeri	0.5
Showy Goldeneye	Heliomeris multiflora	0.25
Western Yarrow	Achillea millefolium	0.25
Arrowleaf Balsamroot	Balsamorhiza sagittata	0.3
Scarlet Globemallow	Sphaeralcea coccinea	0.1
Forage Kochia-snowstorm	Kochia prostrata grisea	0.25
Winterfat	Ceratoides lanata	0.25
Fourwing Saltbrush	Atriplex canescens	0.25
Wyoming Big Sagebrush	Artemisia tridentata wyomingensis	0.25
Black Sagebrush	Artemisia Nova	0.25
Total Pounds/Acre		14.25

Seed mixes may change dependent on seed availability but would consist of a mix of cool/warms season grasses, pollinator friendly forbs, sagebrush (Artemisia Tridentata), Artemisia nova) and winterfat *(Krascheninnikovia lanata)* that correlates to the Ecological Site Description and what has been determined to have the best chance of success by the BLM staff to meet the project goals, objectives and Proposed Action listed in section 1.1 and 2.3. Pounds per acre of seed mix (Pounds/Acres) will also vary slightly but is included for reference purposes.

2.3.1 Maintenance

Future maintenance of this project beyond the 10-year scope of implementation will be determined by the Field Manager. This would be accomplished through the DNA process to determine if the current analysis of this EA is sufficient to proceed with maintenance at that time. The maintenance required throughout the lifespan of this project would include hand thinning, mechanical treatments, or herbicide applications to control invasive annual grasses and thin

sagebrush stands or undesirable shrubs and juniper trees throughout the life of the project. Rangeland health assessments and long-term monitoring sites would monitor the success of seeded perennial grasses, forbs, and shrubs.

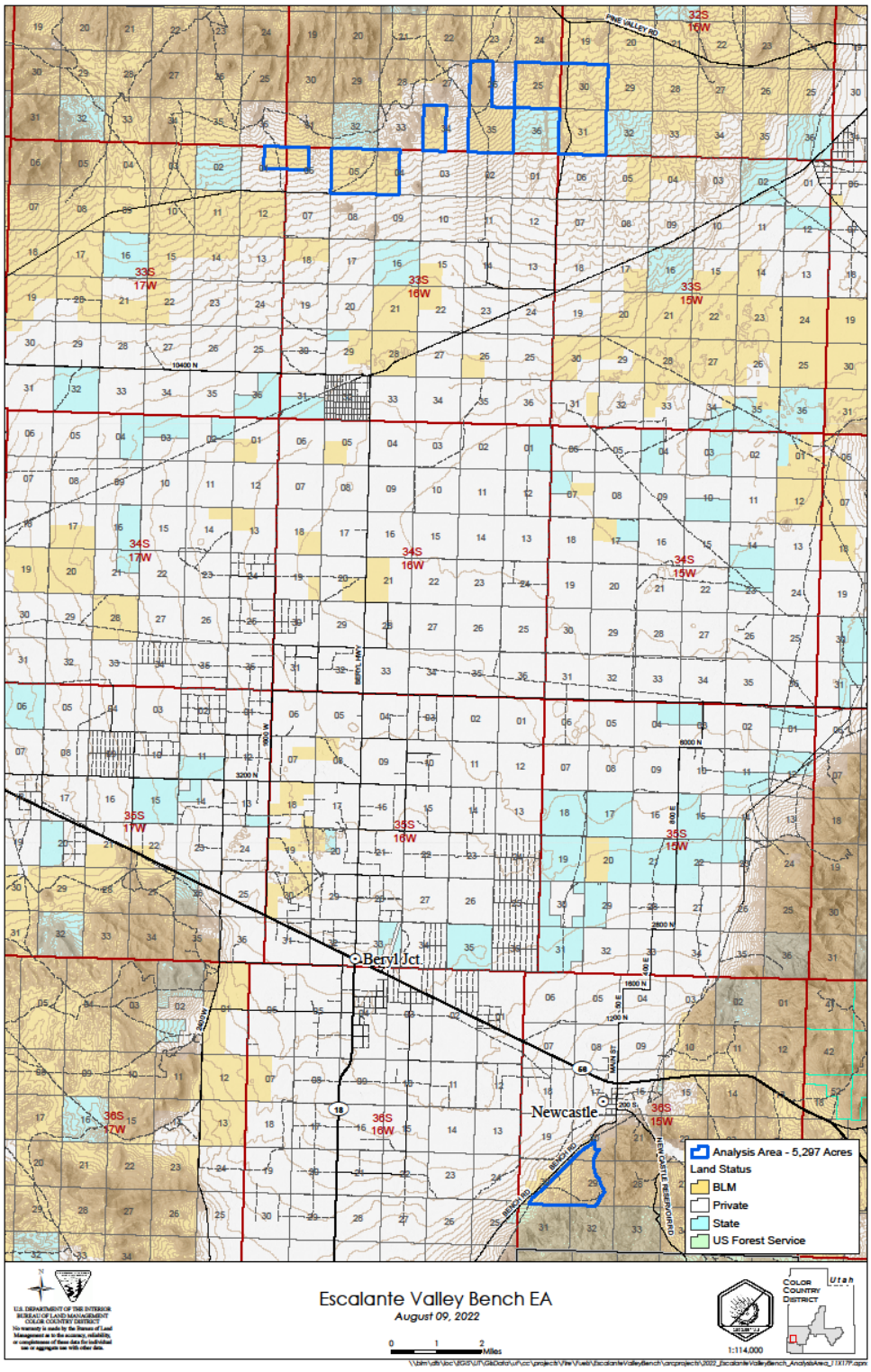
2.3.2 Staging

Staging areas would vary in size depending on the type of equipment used and size but would be located within previously disturbed areas adjacent to existing roads.

2.3.3 Design Features

Design features to avoid, reduce, or eliminate impacts and the undue degradation of public lands, are included in Appendix A.

Figure 5- Project Area Overview Map



2.4 ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

The alternative listed below was initially identified and considered during early internal pre-scoping but was not carried forward due to the reasons listed below.

2.4.1 Prescribed Fire Alternative

The CCFO identified opportunities to incorporate prescribed fire (Broadcast burning) into habitat improvement projects. However, it was determined that this area would not be conducive for prescribed fire because most of the project is within old decadent sagebrush stands that lack fine fuels or already has invasive species (cheatgrass) established where fire may promote a niche for greater establishment. Hazardous levels of fuels have built up in the Newcastle Project Area which presents a community safety hazard. For these reasons this alternative was considered but dismissed from further analysis for the reasons stated above.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

The affected environment was considered and analyzed by an interdisciplinary team as documented in the Interdisciplinary Team Checklist (Appendix B). The checklist indicates which resources of concern are either not present in the project area or would not be impacted to a degree that requires detailed analysis. Issues impacted to a level requiring further analysis are described in this chapter.

3.1 Past and Reasonably Foreseeable Future Actions

Utah BLM, and more specifically the Color Country District, has a roughly 20-year history of planning and implementing habitat and vegetation projects (with treatment methods like the Proposed Action) across the landscape. When combined with similar efforts by other agencies, the natural occurrence of the fire on these landscapes, and implementation of treatment on only a small portion of available habitat each year, the age of the treatments diversifies and results in uneven age-stands of sagebrush steppe vegetation types across the landscape.

3.2 Analysis Area Cumulative Impacts

The analysis area for cumulative impacts will be kept to the boundaries of both proposed project areas (Figure 5, Figure 6). The below table shows disturbance features found within the project areas that have resulted in some level of disturbance in the past and will continue as impact features within the project after project work has been implemented.

There is an electrical transmission line and natural gas pipeline that border the northeast edge of the Newcastle Project Area but are outside the fence line that defines the project boundary and will be excluded from analysis. There are also no current minerals or geothermal permitted activities with the project areas.

Table 9- Features adding to Cumulative Impacts

Feature	Miles	Approximate Acres of Disturbance
Fence Lines	43	10
Pipeline	3.6	2
Roads (primary, secondary, Unimproved)	9	11

3.3 Issue 1 Soils: How would ground disturbance affect erosion and soil compaction?

3.3.1 Affected Environment

The analysis area for impacts on erosion and soil compaction is the GIS boundary of the proposed project area. Soil descriptions of the project area can be found on the Natural Resource

Conservation Service's (NRCS) Web Soil Survey, or the reports created for the project area can be found in ePlanning (https://eplanning.blm.gov/eplanning-ui/project/2021748/510).

The erosion factor K is a measurement that indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range between 0.02 – 0.69. The higher the K-factor value, the more susceptible the soil is to sheet and rill erosion by water. K Factor within the project area is between 0.10 – 0.24.

Soils in the project area range from fine to coarse textured loams, which are generally well suited to rangeland seeding. Permeability, or the relative rate at which water infiltrates the soil profile, ranges from moderately slow to rapid. Soils with moderately slow permeability can be subject to rapid runoff and often have higher water holding capacity. Soils within the project area currently have moderate to rapid permeability which are subject to less runoff and various types of water erosion. These soils retain moisture for a shorter time or are excessively drained due to the larger particle size of the soil aggregate.

Research has shown that woodland encroachment into sagebrush steppe systems increases surface runoff and erosion[8]. Runoff and erosion rates are highest within the inter-space zones between trees and brush which negatively affects wildlife habitat and decrease soil productivity. Sites that have been infilled by pinyon pine and juniper have limited herbaceous understory and are more susceptible to water erosion. Steep slopes with limited herbaceous understory have an increased susceptibility to water erosion.

Dependent on slope, precipitation, and winds, the presence of pinyon pine, juniper, and old decadent sagebrush stands can impair hydrologic function and increase soil erosion due to loss of protective understory vegetation. The Newcastle Project Area has slope restrictions as part of the associated design features that limits treatments to 25 percent slopes or less within the areas of the Proposed Action.

Past and present actions that affect the soils in the project area include approximately 520 acres of fuels reduction treatments (completed in 2004) (Figure 2), and livestock fencing. The project area has become highly erodible due to the dominance of old decadent sagebrush and dominance of annual grasses in portions of the project area with relatively little herbaceous understory. The following table provides soils information within the project area.

[8] Miller et al., 2005.

Table 10- Soils in the Project Area (Wood West Project Area)

Ecological Site	Map Unit Symbol	Map Unit Name	Acres within Project Area	Percentage within Project Area
R028AY220UT – Semidesert Loam (Wyoming Big Sagebrush)	308	Ashdown fine sandy loam, 0 to 5 percent slopes	121	2%
R028AF214UT- Semidesert Gravelly Loam (Wyoming Big Sagebrush) South	321	Bannion gravelly loam, 2 to 5 percent slopes.	106	2%
R028AY224UT- Semidesert Sandy Loam (Winterfat)	329	Biblesprings-Bannion complex, 2 to 5 percent slopes	505	10%
R028AY243UT-Semidesert Shallow Loam (Wyoming Big Sagebrush) North	347	Checkett-Rock outcrop complex, 5 to 40 percent slopes.	656	12%
R028AY232UT-Semidesert Shallow Hardpan (Utah Juniper)	349	Chuska-Checkett gravelly loams, 8 to 25 percent slopes	8	0.2%
R028AF214UT- Semidesert Gravelly Loam (Wyoming Big Sagebrush) South	359	Deerlodge gravelly loam, 2 to 15 percent slopes	140	3%
R028AY220UT – Semidesert Loam (Wyoming Big Sagebrush)	381	Garbo gravelly sandy loam, 2 to 5 percent slopes	1,396	26%
R028AY220UT – Semidesert Loam (Wyoming Big Sagebrush)	382	Garbo-Deerlodge complex, 2 to 8 percent slopes	153	3%
R028AY224UT- Semidesert Sandy Loam (Winterfat)	383	Garbo-Deerlodge complex, 2 to 8 percent slopes	827	16%

Ecological Site	Map Unit Symbol	Map Unit Name	Acres within Project Area	Percentage within Project Area
R028AY236UT- Semidesert Shallow Loam (Black Sagebrush)	472	Saxby-Rock outcrop-Checkett complex 15 to 40 percent slopes	29	0.6%
R028AY224UT- Semidesert Sandy Loam (Winterfat)	478	Sevy-Ardnas complex, 0 to 5 percent slopes	402	8%
R028AY006UT- Loamy Bottom (Great Basin Wildrye)	504	Wales loam, 0 to 2 percent slopes	183	4%
Total Acreage			4,526	87%

Table 11- Soils in the Project Area (Newcastle Project Area)

Ecological Site	Map Unit Symbol	Map Unit Name	Acres within Project Area	Percentage within Project Area
R028AF214UT – Semidesert Gravelly Loam (Wyoming Big Sagebrush) South	304	Annabella very gravelly loam, 2 to 15 percent slopes	89	2%
R028AY220UT – Semidesert Loam (Wyoming Big Sagebrush)	309	Ashdown loam, 2 to 5 percent slopes	2	0%
R028AY238UT- Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass)	348	Checkett-Rock outcrop complex, 8 to 25 percent slopes	490	9%
R028AF214UT- Semidesert Gravelly Loam (Wyoming Big Sagebrush) South	370	Dixie gravelly loam, 2 to 8 percent slopes	183	4%
Total Acreage			764	15%

*Total acres from soil report are 5,290. This varies slightly from the total project acres within the Proposed Action. However, the project areas will still be considered 5, 297 acres.

3.3.2 Proposed Action

The Proposed Action would have direct impacts to soils where machines would disturb the soil surface. Ground disturbing methods typically affect the top 8 to 12 inches of the soil profile through altering aggregate stability, mixing of soil horizons, and changing soil pores. Removal of vegetation would leave soils exposed to increased wind and water erosion, loss of soil structure, and reduced infiltration[9]. Implementation of design features identified in Appendix A would reduce overall wind and water impacts to soil erosion.

The Proposed Action would promote healthy sagebrush communities, restore winter fat communities, and open the tree canopy while seeding desirable understory species which would improve soil conditions in much of the project area. Benefits of the Proposed Action would include debris being left in place to minimize runoff and erosion, shading of the soil surface, and maintaining soil moisture and nutrient cycling.

3.3.3 No Action

Under the No Action alternative, old decadent stands of sagebrush would continue to persist and die off over time, these sites have large interspaces of bare soil that allows for invasive cheatgrass to infill without competition of perennial herbaceous species. Pinyon pine and juniper the project area would continue to infill and crowd out other plants within the vegetative community, competing for nutrients and sunlight and reducing the ability of understory species to compete.

3.3.4 Cumulative Effects

Past and present actions include approximately 520 acres of previous fuels reduction treatments (see Figure 2), livestock fencing and the two transmission lines and buried natural gas line within the Newcastle project area (see Table 9). Both the Newcastle and Wood West Project Areas have potential erodible soils due to the lack of herbaceous understory. Reasonably foreseeable future actions would be approximately. 2,000 acres of treatment that would likely occur on private land in the area. See (Table 9 and Table 10) for soil information within the project area.

3.4 Issue 2 Vegetation: How would habitat improvement treatment methods impact herbaceous plant species' cover and diversity?

3.4.1 Affected Environment

The analysis area for the proposed impacts on vegetation is the defined project area found within Figures 1-5 which includes approximately 5,297 acres of BLM administered land with variable elevations, slopes, topography, and soil types. The vegetation type is highly variable throughout the project area. Vegetation was placed into general categories using LANDFIRE Existing Vegetation Type (EVT) Data[10]. The following table (Table 12) outlines the categories and the public land acres within the project.

[9] BLM, 2005. Effects of mechanical treatments are incorporated by reference.
[10] U.S. Geological Survey, 2012.

Table 12- Vegetation Categories and Acreage in the Project Area

Vegetation Category	Total Acres
Pinyon-Juniper Woodland	228
Mountain Mahogany Woodland and Shrubland	<1
Low Sagebrush Shrubland and Steppe	498
Big Sagebrush Shrubland and Steppe	3,796
Salt Desert Scrub	566
Desert Scrub (Blackbrush)	41
Big Sagebrush Shrubland and Steppe	6
Desert Scrub (Wyoming Big Sagebrush)	128
Grassland	<1
Greasewood Shrubland	2
Introduced Annual Grassland	20
Introduced Perennial Grassland and Forbland	<1
Introduced Annual and Biannual Forbland	2
Big Sagebrush Shrubland and Steppe	8
Developed Upland Shrubland	<1
Total	5,297

Vegetation Categories (Table 12) show that the project area consists of 85% shrublands. These shrublands within the project area have a limited understory of forbs, and grasses present. There are also pinyon-juniper stands (Newcastle Project Area) that lack the presence of herbaceous understory consisting of sagebrush, perennial grasses, and forbs that are typically found within a pinyon-juniper dominant ecological community.

Past and present actions in the project area that have impacted vegetation characteristics include approximately 520 acres of habitat restoration that occurred in 2004 and was re-treated in 2014 which promoted perennial grasses but was not re-seeded. These treatment areas have become

less productive over time due to drought and invasive annual grasses starting to fill in the bare interspaces of old brush stands.

The project area's vegetation can vary based on soil type, and ecological site characteristics (see Table 9, 10 and 11). Therefore, each treatment method may vary throughout the project area. An adaptive management strategy would be used to change timing and treatment methods based on the success of small-scale treatments prior to full implementation within the project boundary.

3.4.2 Proposed Action

The Proposed Action would provide for a diverse composition and production of perennial grasses, forbs, and shrubs to be implemented under a more controlled environment. Habitat restoration actions would cause disturbances to plant communities by killing both target and non-target plant species; the extent of these disturbances would depend on the type of treatment. In many cases, the treatments would return all or a portion of the treated area to an early successional stage. Due to the historical fire suppression, habitat restoration activities are expected to benefit plant communities by mimicking a natural disturbance event. Successful treatment would result in the restoration of degraded areas to a more natural condition with a diverse establishment of perennial grasses, forbs, and shrubs and woodlands.

3.4.2.1 Lop and Scatter

The lop and scatter treatment would allow for cut material to be left on site, which is expected to increase the current moisture retention capabilities, protecting the soil by reducing soil movement, and provide microsites for perennial grasses, forbs, and shrubs. The lop and scatter treatment method would also allow for nutrient cycling as the vegetative material breaks down over time.

3.4.2.2 Mulching (Bullhog)

Mulching treatment (bullhog) would leave vegetative debris in place to minimize runoff and erosion, shade the soil surface and maintain soil moisture and nutrient cycling. The mulching treatment method would provide a variety of seeding depths and microsites as the machine moves throughout the treatment area. The mulching treatment method would improve vegetative ground cover and forage production in the long-term.

3.4.2.3 Harrow/Disk/Anchor chain

Harrow/disk/anchor chain treatments would leave debris in place to minimize runoff and erosion, shade the soil, maintain soil moisture, and provide nutrient cycling. The harrow would also provide a seed bed allowing for a variety of seeding depths throughout the treatment area. The harrow method would improve vegetative ground cover and forage production in the long-term.

3.4.2.4 Herbicide

Herbicide treatments would be applied through aerial broadcasting. Creating no soil disturbance. Herbicide treatments would include approved BLM herbicides used to eliminate annual grasses and sagebrush. This method may be used to control dense mature sagebrush stands or used to

reduce the chance of annual grassland invasion onto the treated areas. These areas will be seeded with a diverse perennial grass, forb, and shrub seed mix following aerial treatment.

3.4.2.5 Mowing

Mowing treatments would be utilized to treat sagebrush areas. This treatment would only disturb the top three to four inches of topsoil in the tracks of the tractor and mower. The reduction of the above ground biomass (sagebrush) would provide a layer of mulched organic material to protect the soil from erosion and other effects.

3.4.2.6 Seeding

Seeding treatment methods, including broadcast and drill seeding, are expected to improve the quality and quantity of herbaceous species throughout the project area. Increased composition and production of herbaceous species is expected following the treatments. Drill seeding would disturb the top three to four inches of topsoil in the tracks of the tractor and seeder.

3.4.2.7 Hand Planting

Seedling or tubeling planting would be used to re-establish healthy stands of sagebrush *(Artemisia tridentata), (Artemisia nova)* bitterbrush *(Purshia tridentata)* and winterfat *(Krascheninnikovia lanata).* This method would be accomplished through two methods. One method is to utilize handcrews using digging bars to dig small holes 4" in diameter. Then each individual plant would be placed in the ground by hand. The other method would be to use a small to medium size tractor with an implement that would press 2-4" diameter holes in the ground with crews walking behind to place the individual plants by hand. Only the top three to four inches of soil would be disturbed from planting crews walking and tracks of the tractor.

3.4.2.8 Herbicides and Invasive species

There are several drawbacks and limitations to herbicide use. Herbicides can be toxic or cause health problems in humans, other animals, and other plants. Dependent on slopes and soil characteristics herbicides could be transported into non-target areas by runoff, infiltration, or wind. Herbicides can be toxic to wildlife and especially during sensitives time of the year when wildlife are more vulnerable (e.g., nesting, migration). The Design Features in (Appendix A) would be incorporated to test, evaluate, and select areas and timeframes where herbicides would be utilized within the proposed project area. Several herbicides have been proposed and are used individually to target a particular invasive species or used to control woody vegetation (See Proposed Action Treatment Types). The objectives of herbicide use would be to eliminate or reduce existing and post-treatment invasive species to reach the restoration goals and objectives listed in Chapter 1. Herbicides would be used to mimic the natural disturbance cycle in sagebrush ecological sites to recruit/re-establish health sagebrush ecosystems.

With any ground disturbing activity, there is opportunity for invasive species, both native and non-native, to establish in the project area. The establishment of invasive species would depend on the level of disturbance, post-project success and proximity of invasive species to the disturbed area. The Design Features in Appendix A would minimize invasive species introduction. Conducting treatments in areas where cheatgrass is present may result in the spread

of cheatgrass. The risk of noxious weed invasion is expected to be low based on observations of past treatment work that has been completed within the CCFO. Treatment effectiveness monitoring, as outlined in the Design Features in Appendix A, would occur following treatment and if any noxious weeds are present, they would be treated at that time. The areas that would be mechanically or chemically treated would be seeded with a diverse mix of perennial grass, forbs, and shrubs. Pre- and Post- project monitoring, the collection of vegetative monitoring data for 3 years, and closing the treatment area to livestock grazing for a minimum of two growing seasons would reduce the possibility of unsuccessful treatments (Appendix A).

3.4.3 No Action

The sagebrush communities within the project area have reached a successional threshold and are becoming old and decadent in most of the project area. This trend will continue without management actions as shown in many sagebrush ecosites with State and Transition models. This will continue to result in the decline in the production, vigor, and diversity of herbaceous species ultimately resulting in a deterioration of habitat conditions and in the downward trends of the healthy sagebrush stands. In the absence of disturbance or management, sagebrush will continue to die off and will lack sufficient seed source to regenerate new healthy stands and perennial herbaceous understory. Once these sites reach this state, it results in large barren interspaces and a niche for annual cheatgrass invasion where it is not currently present. The pinyon-juniper woodland areas have become closed woodlands and are at risk for a stand replacement fire[11]. Seeding would not be necessary under the No Action Alternative because treatments would not be implemented.

Wildfire would still have the potential to occur in the project area, creating opportunities to move some of the priority treatment areas toward a more desired future condition. However, implementing treatments under post fire conditions is challenging due to critical time frames and competition for available resources and funding. The likelihood of invasive/noxious species establishing on site greatly increases post fire. Hydrophobic soils, due to high temperatures of larger fuel loads, decrease the chance of successful emergency stabilization treatments.

3.4.4 Cumulative Effects

The present and reasonably foreseeable future actions as discussed in the Affected Environment section (3.2.1), are likely to continue into the reasonably foreseeable future. The Proposed Action, when combined with the past, present, and reasonably foreseeable future actions would be similar to the impacts described above. Adjacent to the proposed project area of the Newcastle Project Area a large transmission line and buried natural gas line have been constructed and re-seeded using a mixture of native and non-native perennial grass, forbs and shrubs that have been introduced within the proposed project area. No new seedings associated within these areas are planned to occur. A hand thinning project was completed in 2013 to thin juniper trees within the Newcastle Project Area, no species were seeded. Through livestock grazing, recreation,

[11] Miller et al., 2008.

transportation, and utility development, Scotch Thistle (a noxious weed) has been found within the Newcastle Project Area.

3.5 Issue 3 Migratory Birds: *How would migratory birds and their habitats be impacted by the proposed Escalante Valley Habitat Restoration Project?*

3.5.1 Affected Environment

The analysis area for migratory birds and their habitats is 5,297 acres (See Figure 1 - 2) of BLM-administered land in the Escalante Valley within the CCFO. The proposed habitat restoration project area falls within Bird Conservation Region 9, Great Basin. The table below (Table 13) is a subset of birds of priority concern within the proposed project area identified through the United States Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC). This list is not a list of all birds within the project area. Numerous migratory bird species may migrate through, or nest within the proposed project area.

Table 13- Birds of Priority Concern within the proposed project area

Common Name	Scientific Name	CCFO Range
American White Pelican	Pelecanus erythrorhynchos	Migration
Bald Eagle	Haliaeetus leucocephalus	Migration
Clark's Grebe	Aechmophorus clarkia	Breeding
Franklin's Gull	Leucophaeus pipixcan	Migration
Lesser Yellowlegs	Tringa flavipes	Migration
Olive-sided Flycatcher	Contopus cooperi	Breeding
Pinyon Jay	Gymnorhinus cyanocephalus	Year-round
Sage Thrasher	Oreoscoptes montanus	Breeding
Virginia's Warbler	Vermivora virginiae	Breeding
Western Grebe	Aechmophorus occidentalis	Breeding
Willet	Tringa semipalmata	Migration

Habitats throughout the CCFO provide diverse breeding and foraging habitat for raptors. These habitats include rocky outcrops, pinyon juniper woodlands, sagebrush shrub lands, desert scrub, and grasslands. The CCFO BLM observes and monitors raptor nests through a raptor nest database which is continually updated. The raptor nest database would be reviewed and updated for known raptor nests prior to implementation of the proposed project.

3.5.2 Proposed Action

Restoration of sagebrush-steppe ecosystem by the removal of juniper, pinyon pine, and invasive species to increase the perennial grass and forbs component would positively impact certain species of migratory birds, and negatively impact other migratory bird species. Species such as the pinyon jay, juniper titmouse, blue-gray gnatcatcher, and gray vireo, which habitat requirements include pinyon pine and juniper, will decline in the treated area and be forced to occupy adjacent habitat. However, restoration of sagebrush-steppe ecosystem in the proposed project area would result in benefits for sagebrush obligate species such as the Brewer's sparrow, sagebrush sparrow, and sage thrasher.

Restoration of sagebrush-steppe ecosystems, resulting from the Proposed Action, will provide more suitable habitat for prey species such as the black-tailed jackrabbit, pygmy rabbit, and sagebrush vole. Increasing suitable habitat for prey species would positively benefit raptor species. The removal of juniper and pinyon pine would reduce nesting and roosting habitat for migratory birds reliant on this habitat. Design features implementing seasonal restrictions for migratory birds, including raptors, during the nesting period would prevent direct impacts from the Proposed Action (Appendix A).

3.5.3 No Action

Impacts to the no action alternative to migratory birds would be somewhat contrary to the impacts from the Proposed Action. While pinyon and juniper obligate species, such as the pinyon jay, juniper titmouse, and grey vireo, would likely occur at their current rate and range under the no action alternative, sagebrush obligate species would be expected to decrease as sagebrush stands become decadent and die out without suitable seed replacement and ground disturbance. However, sagebrush obligate species would be expected to decrease as sagebrush stands become decadent and die and cheatgrass continues to be prevalent and increases across the landscape.

3.5.4 Cumulative Effects

Past, Present and Future actions are those activities which occur or have occurred in the general area of the proposed habitat restoration project including livestock grazing, recreation, camping, hunting, wildlife viewing, rights-of-way, and mining. Most of these activities have been occurring over the past 80-100 years in the proposed project area and wildlife species associated with these areas are accustomed to these types and levels of disturbance.

3.6 Issue 4. Forestry: How would removal of vegetation affect woodland and forestry resources?

3.6.1 Affected Environment

The analysis area for the analysis of impacts on woodlands and forestry is the 228 acres of woodland vegetation cover types within the project area identified in table 14 and shown in Figure 6. Cover types for the project area were analyzed using LANDFIRE Existing Vegetation Type (EVT) Data (U.S. Geological Survey, 2012.) Woodland cover types comprise approximately 5% of the vegetation cover types within the project area. Of the woodland types,

approximately 99% are pinyon pine and juniper and less than 1% as mountain shrub types. The analysis area does not contain any true forest types (mixed conifer, aspen, ponderosa pine).

(Figure 6 on next page)

Figure 6- Woodland Vegetation Cover Types

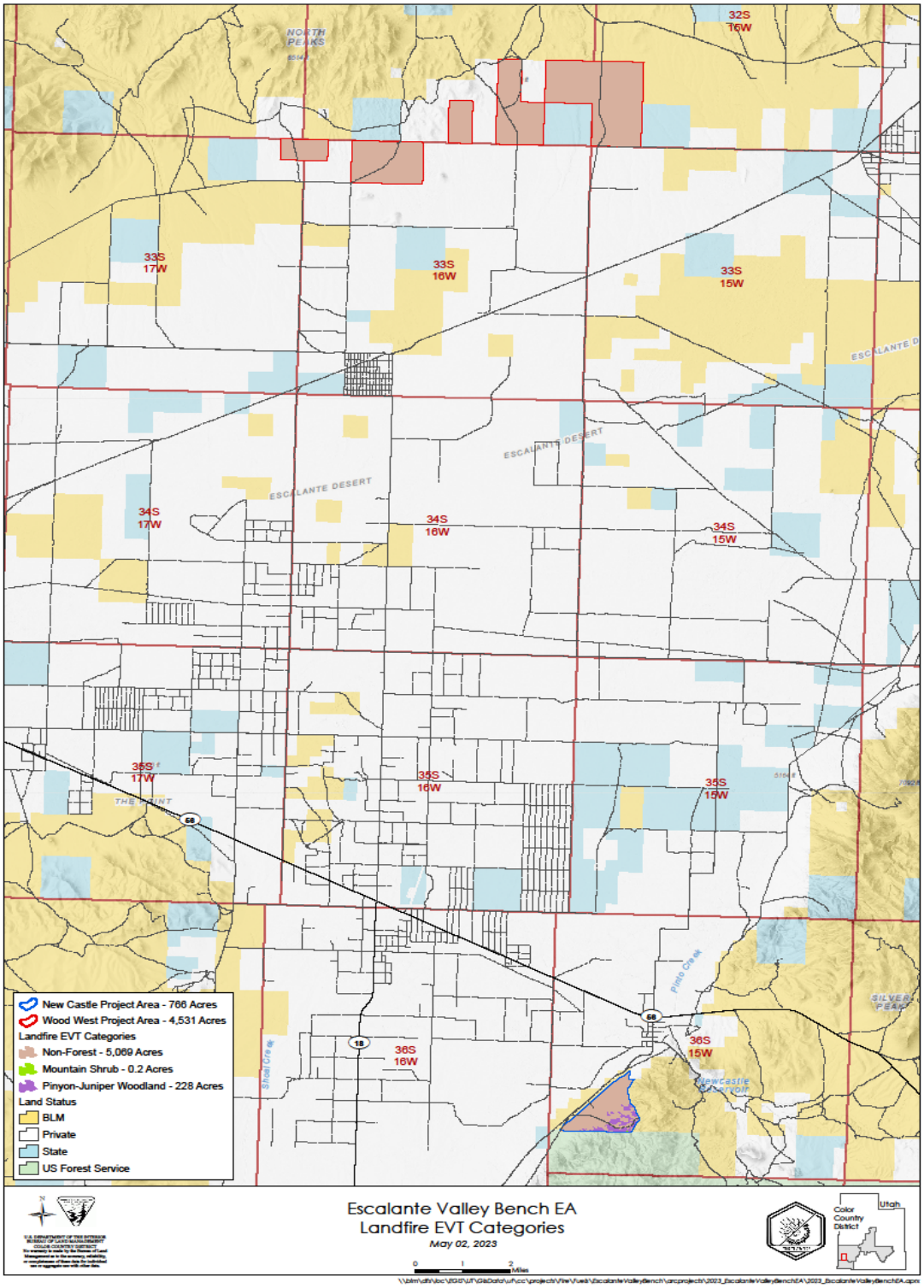


Table 14- Escalante Valley Vegetation Treatment Current Woody Vegetation Cover Types

Escalante Valley Vegetation Treatment Current Woody Vegetation Cover Types (All ownerships within analysis area)			
Cover Type	Acres	Percent of Woodland / Forest	Percent of Analysis Area
Pinyon Pine and Juniper	228	99%	5%
Mountain Shrub	<1	<1%	<1%
TOTALS	228	100%	5%

Note: Table includes only woody vegetation cover types, which is the reason acreages differ from those of the Proposed Action.

Past management actions in the area include thinning and removal of encroaching pinyon pine and juniper trees. Present actions include the use of woodland resources for firewood, fence posts Christmas trees, and pinyon nuts.

3.6.1.1 Pinyon Pine and Juniper

Pinyon pine and juniper, once controlled by natural periodic fire, is now encroaching into ecological sites typically dominated by shrubs and herbaceous vegetation, as well as infilling traditional woodland sites causing increased tree stand densities. Scattered individuals and pockets of old growth juniper (trees <150 years old) exist in the project area. Old growth woodlands that have persisted over centuries are found where ecological site conditions and disturbance regimes are inherently favorable for juniper. This is where trees are the major component of the vegetation unless recently disturbed by a stand-replacing fire or mechanical clearing[12].

Pinyon pine and juniper in the project area are susceptible to insect depredation and disease. Pinyon engraver beetle (*Ips confusus*) causes pinyon pine mortality while cedar bark beetles (*Phoeosinus punctatus*) cause juniper mortality. Pinyon pine and juniper insect/disease activity is currently at endemic levels within the area. There are no outward visible indicators of root disease or mistletoe and there are no signs of defoliation currently.

3.6.1.2 Mountain Shrub

Mountain shrub in the project area is found at moderately high elevations (14-16-inch precipitation types) and is often associated with pinyon pine and juniper cover types, on sites that are wetter than sagebrush-steppe areas. Mountain brush is usually found on north and east slopes that tend to be cooler and moister than south and west aspects. This cover type is highly diverse and includes patches of oak *(Quercus gambelii)*, antelope bitterbrush *(Purshia tridentata)*, Utah

[12] Romme et. al, 2009

serviceberry *(Amelanchier utahenis)*, chokecherry *(Prunus virginiana L.),* cliff rose *(Purshia stansburiana)* and mahogany*(Cercocarpus ledifolius).* In mountain shrub communities, plants generally form a single canopy with canopy closures ranging from 15-40 percent.

3.6.2 Proposed Action

The short-term impact to woodlands would be the reduction of pinyon pine and juniper trees in the project area. The Newcastle Project Area within the analysis area is currently used for forest products: firewood, posts, Christmas trees, and pine nuts. Treatments may impact these activities. Non-treated areas would still be available for these activities. Implementation of the Proposed Action may displace users to other areas outside the project area.

A reduction in the presence of woodlands would reduce the possibility of wildfires on a large landscape scale beyond management objectives that cause total stand loss and greater potential for further sagebrush reductions. Ecosystems with healthy native perennial herbaceous vegetation and low tree density are less likely to experience severe wildfire and more likely to recover to a desirable state following fire[13]. Risk to pinyon pine and junipers from bark beetles and disease would decrease in the long term through the reduction of tree densities, reduced competition, and increased resiliency of remaining woodlands.[14]

Removal of woodland species within areas traditionally dominated by sagebrush/grasslands would allow the sagebrush community to increase age class diversity of sagebrush and allowing a more open canopy for grasses and forbs. Studies[15] have shown that grass and forb species diversity and site resource conservation is better achieved by removing pinyon pine and juniper through methods that provide some degree of soil disturbance, followed by slash scattered across the site to serve as a mulch. See the vegetation (Section 3.4), section of this EA for further discussion on sagebrush/grassland vegetation types and associated impacts.

3.6.2.1 Pinyon Pine and Juniper

Treatment within the pinyon pine and juniper type are primarily thinning trees within recurrent stands to promote multiple resource values including forest health, pine nut production, wildlife habitat, understory production, forage, fuels reduction, and woodland products. The Proposed Action would improve conditions for these values for some time after treatment. These treatments are aimed at reducing pinyon pine and juniper to reduce stand density and open the crown through restoration tools, discussed in the Proposed Action, to promote herbaceous understory.

Sites specifically designated as pinyon pine and juniper treatment areas, are sites where sagebrush and grasslands with adequate understory vegetation were thought to previously occur, and/or sites where pinyon pine and juniper crown densities have increased beyond the maximum stand density index (SDI). Areas where lop and scatter and mastication (Bullhog) treatment types would be used, consists of dense areas of pinyon pine and juniper with very few grasses and

[13] Rau, 2014
[14] Weisberg and Greenwood, 2008
[15] Brockway, 2002

forbs. The main objective would be to open, through thinning or removal, large contiguous areas of pinyon pine and juniper and create a more diverse landscape to more closely mimic past fire regimes. Sites that are not suitable for conversion to sagebrush/grass as determined through project implementation would follow guidelines outlined in, "Preliminary Thinning Guidelines for pinyon pine and juniper Ecosystems[16] (located on ePlanning). These treatments would help move lands within the project area toward the goals and objectives listed in section 1.1.

The Proposed Action within the sagebrush-steppe type would largely be within recurrent pinyon pine and juniper stands to promote sagebrush and grass for wildlife habitat. These actions would include 100 percent tree removal. Because stand density directly affects the ability of individual trees to compete for resources (light, water, soil nutrients), dense woodlands become vulnerable to tree mortality, especially in drought years. Much of the pinyon pine and juniper affected by the Proposed Action is relatively young with lightly to moderately stocked stands. Age classes range from 40-140 years old. In the absence of disturbance/treatment these sites would be expected to develop into mature pinyon pine and juniper woodlands in another 50-100 years.

3.6.2.2 Mountain Shrub

Treatments in mountain shrub would be limited due to slope and access. Hand thinning would primarily be utilized in this vegetation type and would be tied to treatments in adjacent types (pinyon pine and juniper). Hand thinning may be used remove encroaching pinyon pine and juniper and promote regeneration of younger age classes.

3.6.2.3 Mechanical Treatment

Mechanical treatment would result in the reduction of pinyon pine and juniper and the eventual elimination of slash debris from cutting and dispersal of live trees and brush. If insect depredation is ongoing during treatment, research has shown that there would be a potential for short-term (1 – 2 years,) effects from beetles attracted to pheromones in the mulched litter that may then spread to live trees. Damage to pinyon pine and junipers from bark beetles and disease would decrease in the long term (2 – 50 years) through the reduction of dense areas of trees, reduced competition, and increased resiliency of remaining woodlands.[17]

Because mechanical treatment allows for more precise control of vegetation removal, specific areas of diseased trees can be removed and healthy diverse stands can be left un-treated, leaving a mosaic woodland pattern interspersed with sagebrush and grasslands. While there would be a decrease in the actual number of trees available for human uses, long-term effects would include islands of pinyon pine and juniper available for human uses (fuelwood gathering, post and pole cutting, pine nut gathering and Christmas tree cutting) that are more visible and easily accessible because of the open savannah remaining following mechanical treatment.

There would be an increase in vegetative diversity and productivity. A greater availability of soil moisture and lower evaporation rate would have short-term beneficial effects toward the establishment and success of re-vegetation efforts and long-term beneficial effects from

[16] Page, 2005
[17] West and Van Pelt, 1987, Negron and Wilson, 2003.

increased herbaceous cover. Long-term (2 – 50 years) benefits may also be realized from the reduction in numbers of trees and the resulting diversification of age classes, which would promote healthier stands of woodland trees.

3.6.2.4 Chemical Treatment

Herbicides would have contact with non-target vegetation through drift, runoff, wind transport or indirect spraying. Risks would be greater in applications with small buffer zones or if applied from great heights, although effects to non-target plants would be minimized if targeted vegetation were treated selectively. Selective herbicides typically only target certain species and are applied at specific application rates usually in low concentrations that have little to no effect on non-target species such as pinyon pine and juniper. Application rate is the foremost factor in determining risk, with low application rates less likely to pose a risk to adjacent vegetation[18]. The control of populations of invasive, non-native species would lead to the reestablishment of more desired species, especially in areas where perennials were established or where seeding treatment of desired species is implemented.

3.6.3 No Action

Insect mortality in woodland types could occur at any time as tree densities continue to increase and when drought conditions prevail. Trees would continue to increase in density (numbers of stems) and would be expected to continue to replace sagebrush and grass in areas adjacent to current juniper and pinyon pine stands.

3.6.4 Cumulative Effects

Past, present, and reasonably foreseeable future activities, including the Proposed Action, would be a loss of woodland resources (firewood, posts, Christmas trees, and pine nuts) during disturbance and a potential increase in non-native invasive species. If implemented as proposed, the Proposed Action would improve the ecological site conditions within the analysis area.

Most of the area disturbed would be seeded once the projects have been completed. However, these areas are not always seeded with the same species that were previously established, possibly changing the number and diversity of plant species.

There would be no contribution to cumulative effects under the No Action Alternative However, current authorized management actions (grazing, road maintenance, fire suppression, etc.) would continue.

[18] 17 States Herbicide PEIS, Chapter 4, Page 4-51

3.7 Issue 5. Big Game: How will implementation of the Proposed Action affect winter mule deer habitat quality in the Newcastle Project Area?

3.7.1 Affected Environment

Crucial mule deer winter range is defined as, "…that portion of the habitat that if eliminated would significantly jeopardize the future of the herd.[19] Due to the high fidelity to seasonal ranges and repetitious behavioral patterns of mule deer, disruption within an established migration corridor or seasonal range can have profound impacts on the species. Therefore, protection of these highly sensitive habitats has been widely recognized in literature and BLM planning efforts.[19] [20] [21] [22] [23] [24]

The proposed project area includes crucial mule deer winter range on portions of the Southwest Desert #20 (north of Beryl) and the Pine Valley #30 (Newcastle area) wildlife management areas, which is largely composed of BLM and private lands. The habitat preferences presented below should be considered in all project planning phases and design features applied to the project.[25]

While pinyon and juniper encroachment can be limiting to some winter ranges, pinyon and juniper stands do provide thermal and hiding cover which has been shown to be strongly selected by mule deer. Mule Deer research and guidelines cited below[26] show that pinon and juniper habitat received the highest proportion of mule deer use of any vegetation type. Additionally, multiple habitat modeling studies have revealed that mule deer exhibit a strong avoidance to roads that are open to human uses and disturbance which represents a substantial functional loss of habitat in proximity to roads where suitable habitat may no longer be used. [27] [28] Mule deer will benefit from the creation of a mosaic pattern of open and closed vegetation types that provide mixed habitat conditions.[29] Sorenson[30] Found that deer were more likely to select moderately open savanna-like habitats near water, on northeast-facing aspects, and on gentle (<12%) low-elevation slopes. [31]Bender found that mule deer selected for pinon juniper habitats more than any other vegetation type.

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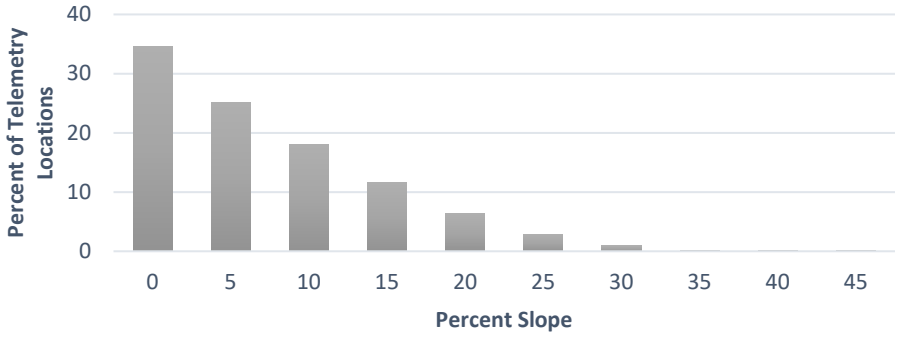
[19] BLM 1986
[20] Cox et al. 2009
[21] Sawyer et al. 2017
[22] US Department of Interior 2018
[23] Kaufmann et al. 2020
[24] Sawyer et al. 2020
[25] Watkins et al. 2007, Cox et al. 2009, Bender 2020
[26] Anderson et al. 2012, Coe et al. 2018
[27] Rowland et al. 2000, Sawyer et al. 2006, Coe et al. 2011, Webb et al. 2013, Gilbert et al. 2017, Coe et al. 2018
[28] Rogala et al. 2011
[29] Long et al. 2009
[30] Sorenson et al. 2020
[31] Bender 2020

In general, mule deer typically select areas with moderate slopes less than 25%[32] since the use of steep slopes (>12-15%) is likely a function of acquiring available resources (high nutritious forage and water), seeking thermal cover[33], and predator avoidance behaviors during fawning[34]. Slopes steeper than 25% were not selected based on observed data obtained from radio collared mule deer on the adjacent WMU (Panguitch Lake WMU #28) in southern Utah (Graph 1). Sorenson et al. 2020 found that treatment of Pinyon and Juniper at <12% slope had a positive influence on mule deer use of the associated area.

Graph 1- Distribution of mule deer telemetry data points (n=487,003) within 5% slope increments on the Panguitch Lake WMU #28 (Dec 2018 to July 2021).



Big Game Population Trends

Mule deer populations in Utah have been in a state of decline for more than 30 years where habitat loss and degradation have been identified as the primary factors driving this decline.[35] Public land winter range availability and protection of crucial habitats were identified as limiting factors to achieving population objectives in both Wildlife Management Unit (WMU) plans.[36]

Range Condition Trends

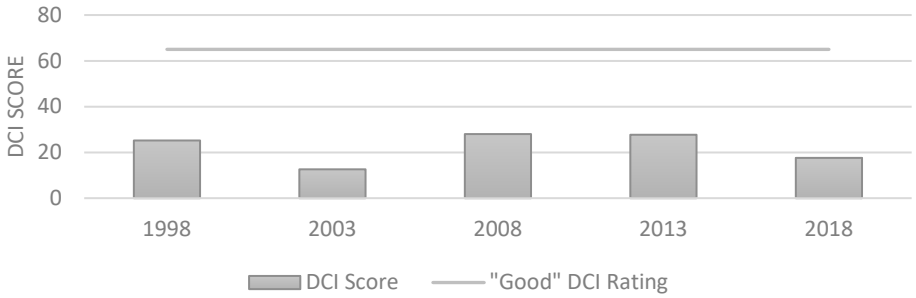
The quality of habitat will ultimately influence mule deer selection and continued use in specific areas. This area is monitored by the BLM through range trend health analysis as well as the UDWR in big game range trend studies. The latter provides an assessment of the area for the Desired Component Index (DCI) which was designed to score mule deer winter range based upon several important vegetation components (i.e. 12-20% preferred browse cover, 20% or less shrub decadence, 10% or more shrub recruitment, 8-15% perennial grass cover, 5% perennial forb cover, less than 5% annual grass cover, and presence of noxious weeds). Although the index

[32] Sawyer et al. 2006, Anderson et al. 2012, Webb et al. 2013, Coe et al. 2018
[33] Coe et al. 2018
[34] Long et al. 2009
[35] Bernales et al. 2015, BLM 2019
[36] UDWR 2020a, 2020b

may be useful for assessing habitat for other species (i.e. sage-grouse and elk), the rating system was devised to specifically address mule deer winter range requirements.[37]

The project area north of Beryl contains a small portion of winter range where the nearest range trend site (Mustang Spring 20-11) is approximately 5-6 miles away and evaluated the DCI value in 2017 with a "Very Poor" ranking.[38] For the area near Newcastle, there are two range trend sites (SW Newcastle 30-29 and Newcastle Bullhog 30R-1); however only the SW Newcastle site (30-29) was scored for DCI values which ranked in the "Very Poor" category. A summary of DCI Scores for the SW Newcastle Site is provided in Graph 2.

Graph 2. Summary of Utah Division of Wildlife Resources Big Game Range Trend monitoring of the Desirable Components Index scores for mule deer winter range on the Southwest of Newcastle site (30-29) on the Pine Valley Wildlife Management Unit #30 (1998-2018, Summarized from UDWR Publication Number 19-15 2018).



The UDWR big game range trend sites on winter range within the project area categorize pinyon and juniper encroachment in sagebrush systems as a "low" threat. These range assessments identify annual grasses as a "High" (Newcastle portion) and "Med" (Beryl portion) limiting factor to mule deer habitat due to increased fire potential and a reduction in herbaceous diversity. Limiting factors for all sites have been summarized in Table 15 which should be the main guide for specific project design for these project areas within mule deer winter range.

Table 15- Summary of limiting factors and/or threats and level of threat to Utah Division of Wildlife Resources (UDWR) Big Game Range Trend study sites within the Escalante Vegetation Treatment project area (Summarized from UDWR 2017 and 2018).

Wildlife Management Unit	Study #	Name	Limiting Factor	Level of Threat	Potential Impact
Pine Valley	30-29	SW of Newcastle	Annual Grass	High	Increased fire potential and reduced herbaceous diversity

[37] UDWR 2018
[38] UDWR 2017

			PJ Encroachment	Low	Reduced understory shrub and herbaceous vigor
	30R-01	Newcastle Bullhog	Annual Grass	High	Increased fire potential and reduced herbaceous diversity
			PJ Encroachment	Low	Reduced understory shrub and herbaceous vigor
Southwest Desert	20-11	Mustang Spring	Annual Grass	Med	Increased fire potential
			Introduced Perennial Grass	Med	Reduced diversity of desirable grass and forb species
			PJ Encroachment	Low	Reduced understory shrub and herbaceous vigor

This project would contribute to the human-related disturbance on big game winter range if the project does not incorporate mule deer specific habitat guidelines.[39] According to the Western Association of Fish and Wildlife Agencies (WAFWA), habitats that are important to mule deer are facing unprecedented threats from a large variety of human related developments.[40] Habitat restoration efforts have a high degree of success for mule deer but can also pose a challenge in meeting habitat requirements of mule deer in the face of human development, invasive vegetation, and prolonged drought conditions. If restoration efforts are too aggressive or designed to favor other land uses or other sagebrush obligate species, the resultant habitat may be abandoned or result in lower survival and fertility of mule deer resulting in population level effects.[41]

In this analysis we will evaluate functional habitat availability based on mule deer behavior and habitat preferences including flight distance and avoidance from disturbance.

Taylor and Knight[42] documented a 96 percent flight probability for mule deer within 100m of trails in Utah. They did not detect a difference in flight disturbance regardless of whether it was caused by mountain bikers or hikers. Type of recreation also created variability in the response of big game by species and avoidance behaviors ranged from 300m to 1500m[43]. Variability in

[39] Watkins et al. 2007, Cox et al. 2009, Bender 2020)
[40] Cox et al. 2009
[41] Longshore et al. 2013, Sawyer et al. 2006, Sawyer et al. 2017
[42] Taylor and Knight 2003
[43] Wisdom et al. 2004, Preisler et al. 2014, Larson et al. 2016, Sawyer et al. 2017

these results may be attributed to variations in context: e.g., terrain, vegetation cover, and human use rates.

In this analysis we utilize a 100m buffer around roads and trails to analyze the scale of impact to wintering big game already present within the project area. Based on the literature, we assume that all areas within 100m of proposed trails or other developments have or will become functionally unsuitable habitat for wintering mule deer. We acknowledge that we are not including potentially relevant variables, including cover, topography, and proximity to existing routes, but assume this is addressed by the 100m buffer. We are also not including a gradient of impacts relative to distance—i.e., it can be assumed that avoidance behavior would occur well past the 100m buffer, but to a lesser extent as the distance increases.

The Newcastle Project Area contains approximately 766 acres of BLM lands, of which 520 acres (68% of the project area) are within 100m of an existing road and within the preferred mule deer slope threshold of ≤25%. The Beryl project area contains approximately 4,531 acres of BLM lands, of which 142 acres (3% of the project area) are within 100m of an existing road and within the preferred mule deer slope threshold of ≤25%. The Proposed Action in the Newcastle Project Area is smaller and has been highly impacted by roads and trails, the remaining 246 acres (Figure 2 and Appendix A) would be closely evaluated if Pinyon and Juniper trees should be left untreated to promote hiding and thermal cover as per WAFWA mule deer habitat guidelines.[44]

3.7.2 Proposed Action

During project implementation, mule deer, as well as other wildlife species, would be impacted by the Proposed Action through increased traffic, human presence, and noise. The primary impact would be the temporary displacement of wildlife from the treatment area. New surface disturbance and the incidental removal of some non-target vegetation would also make the areas less suitable for a variety of wildlife using the project area.

After project implementation, the project is expected to improve critical winter range for mule deer by promoting sagebrush steppe species while leaving adequate pinyon and juniper trees for thermal cover. Mosaic patterns of tree removal would also be beneficial for any pinyon and juniper obligate species in providing for a diversity of age classes in vegetation and species richness. Maintaining the resiliency of the sagebrush-steppe ecosystem, while creating a mosaic of potential habitat for wildlife species to adapt to changing conditions is critical for their long-term survival.

The Newcastle Project Area is geographically small with a high percentage of previously impacted habitat, the Proposed Action would lead to functionally lost habitat if too much hiding cover is removed through pinyon and juniper removal. To minimize negative impacts and maximize habitat value for mule deer the project should include a planning effort to:

[44] Cox et al. 2009

1. Prioritize habitat restoration efforts on addressing annual grasses to promote mule deer winter range health towards improving the Desired Components Index.[45]
2. Promote a healthy productive mosaic of shrub age classes *and* canopy covers with a diversity of plant species in sustainable sagebrush communicates.
3. Maintain or restore important shrub communities.
4. Mitigate shrub ecosystem loss, fragmentation, or degradation.
5. If tree removal is necessary, removal should only occur on slopes ≤20%.
6. If tree removal is necessary, removal should promote diversity of age classes to improve forest health and therefore promote high quality wintering cover for mule deer.
7. If tree removal is necessary, removal should be planned to ensure "a high edge to treated area ratio with irregular edges and visual barriers."
8. For each section (640 acres) of PJ, 1/4 should remain unmanaged and should have at least 60% PJ cover (if existing cover is <60%, these areas should be allowed to develop to >60% cover), one-quarter should be thinned to no less than 30% PJ cover, and the remaining half can be thinned to no less than 10–15% cover. Further, no unmanaged stand should be less than 40 acres.
9. No point within the treatment area should be more than 660 ft from cover. For logistical purposes, cover is defined as any stand of trees ≥ 40 acres.
10. Eliminate the creation of new roads through active monitoring and management of these routes resulting from treatment operations.

3.7.2.1 Effects of Existing and Potential New Roads

In addition to the effects of existing roads, vegetation treatments often generate opportunities for new roads to be created. These roads can be created in treatment areas through random use and or where heavy equipment was used to access the project area. Additional roads on winter range exacerbate the impacts of human development and therefore pose an additional impact to mule deer. The trend of increasing human populations in southern Utah[46] and a growing trend of wildland recreational users[47], suggests that if new roads were to be created as a result of the proposed project, it may lead to in an increase in human presence on big game winter range. This would exacerbate energy costs at a vulnerable timeframe for mule deer, potentially impacting overwinter survival and reproductive potential.[48]

3.7.2.2 Effects of Maintenance Projects

Future maintenance projects designed to remove encroaching pinyon and juniper trees into a previous treatment area (or similar vegetation removal treatment type i.e., sagebrush removal through tebuthiuron) promote a management design to perpetually manage for specific habitat types, thereby limiting natural succession of that area. This may have negative limiting and or

[45] UDWR 2018
[46] Hollingshaus et al. 2022
[47] White et al. 2016, Monz et al. 2020
[48] Sawyer et al. 2006

unintended subsidizing impacts to individual wildlife species populations as they experience natural cycles (i.e. subsidizing disturbance or early successional habitat wildlife species (ex. grassland and shrub obligate wildlife species) and suppressing late successional habitat wildlife species (i.e., pinyon and juniper obligate species). Future maintenance projects should consider altering "leave" islands and implement feathering or thinning practices[49] to promote multiple age classes of pinyon and juniper trees and a natural progression of habitat succession.

3.7.3 No Action Alternative

The No Action alternative would not disturb additional habitat in big game winter range. In the short term, disruption of wildlife by treatment activities would not occur. Forage values may continue to decline in Desired Components Index (DCI) values being driven by the persistence of annual grasses.

3.7.4 Cumulative Effects

Past and present uses have impacted wildlife, especially mule deer. Forage has been reduced by Private development and infrastructure (power lines, gas line, paved roads) on mule deer winter range. The Proposed Action would be expected to assist in off-setting these continuing impacts by increasing forage in crucial mule deer winter range.

(Figure 7 on next page)

[49] Page 2008

Figure 7- Map of the Escalante Valley Habitat Restoration EA Project Boundary and crucial mule deer habitat on the UDWR Southwest Desert #20 and Pine Valley #30 Wildlife Management Units.

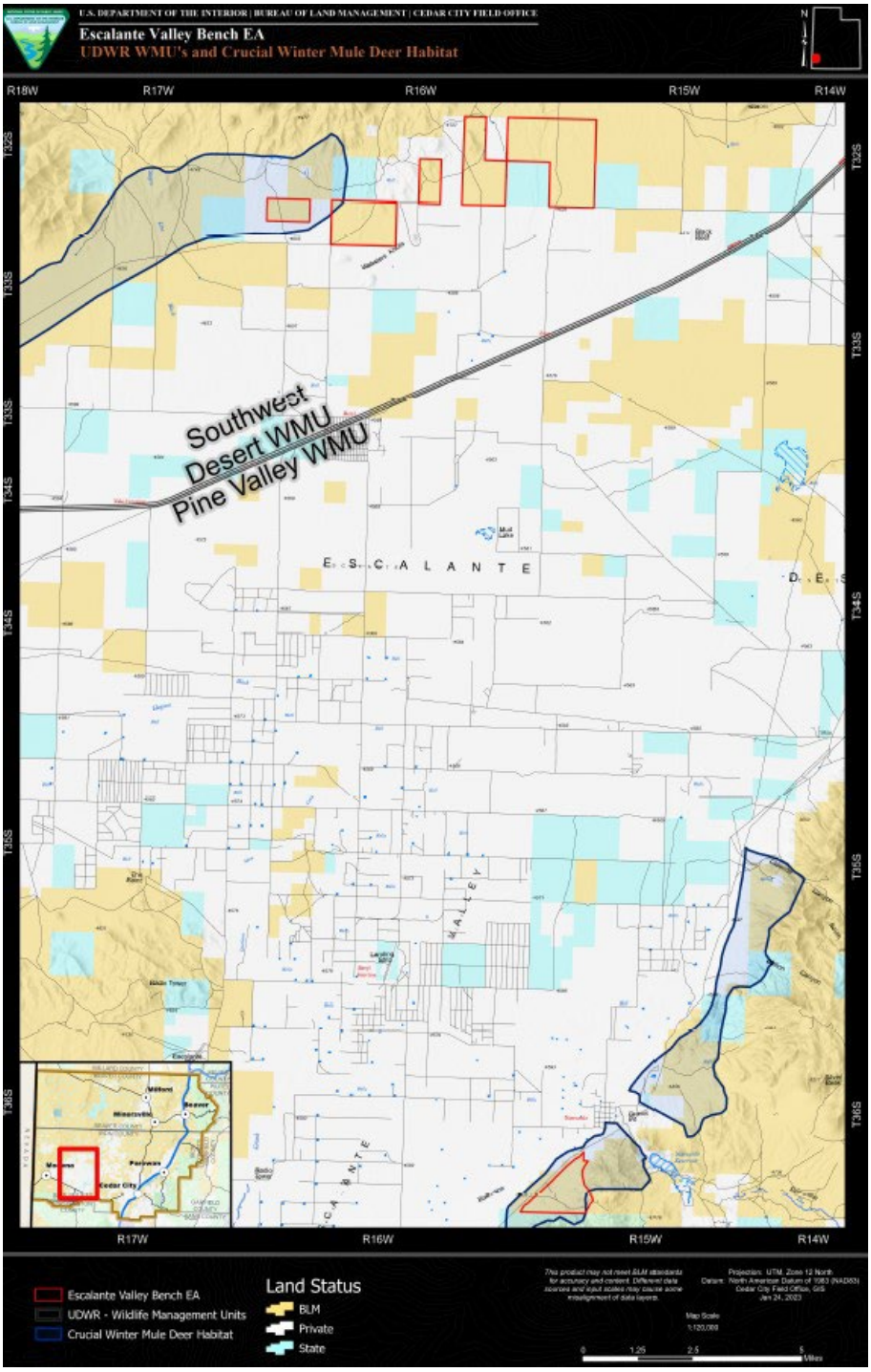
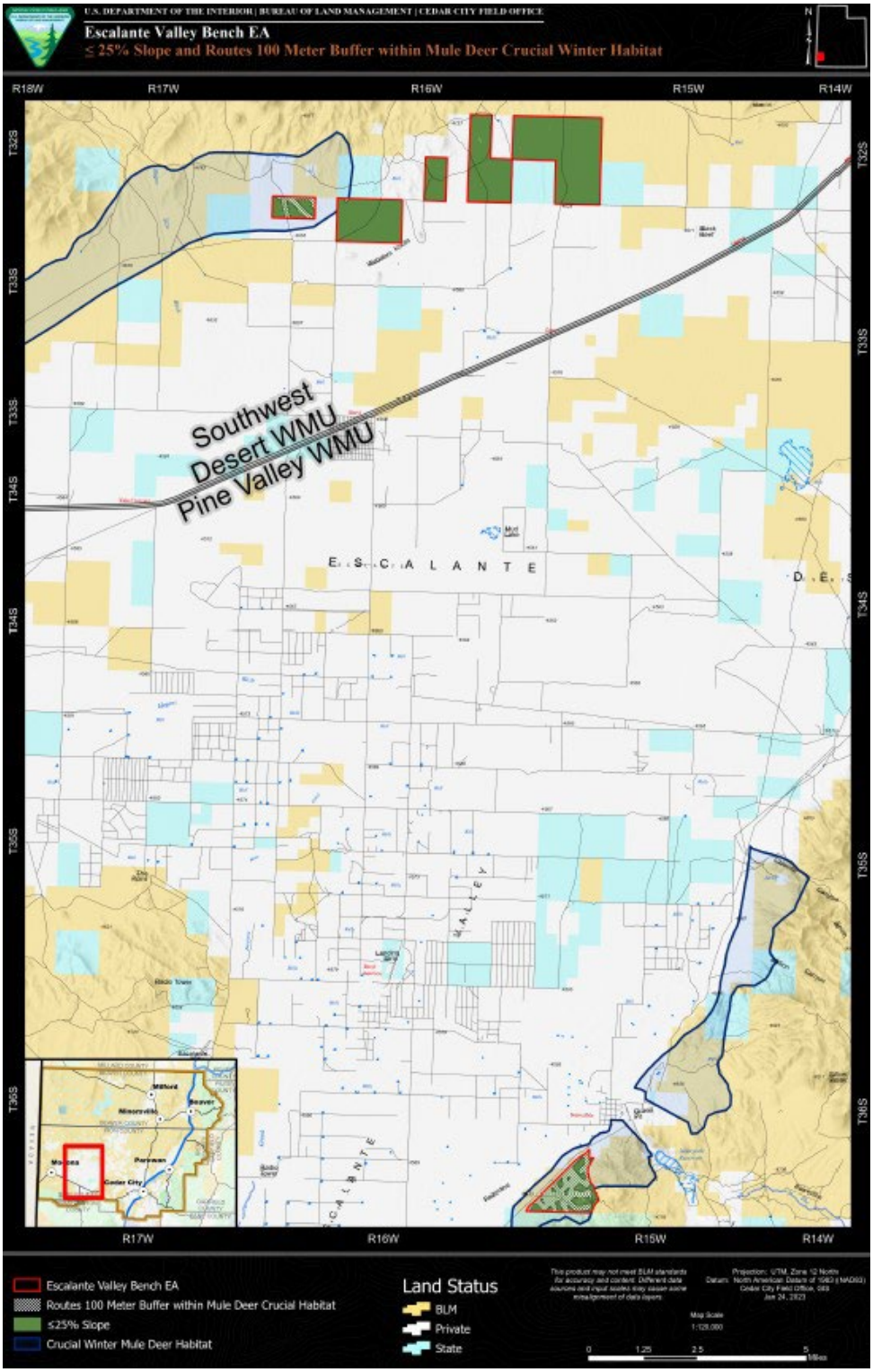


Figure 8- Map of Escalante Valley Habitat Restoration EA Project Boundary and areas greater than 100m from a road and under 25% slope.



CHAPTER 4 PERSONS, GROUPS, AND AGENCIES CONSULTED

4.1 Public Comment Period and Participation

During preparation of the EA, the public was notified of the Proposed Action by posting it on the BLM ePlanning website on October 04, 2022. A 30-day public comment period was offered beginning March 01, 2024. Substantive comments that are received will be addressed in the final version of the Environmental Assessment. The substantive comments and the BLM responses will be contained in Appendix D (if any). Non-substantive comments will be retained in the administrative record for this EA, but do not require a BLM response.

Table 18- Consultation and Coordination

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
Utah State Historic Preservation Office (SHPO)	Consultation for undertakings and notification of intent to use a Phased Approach, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	On 3/6/2023 SHPO concurred with the plan for phasing, and specifically concurred that the APE and identification efforts were appropriate.
• Hopi Tribe of Arizona, • Moapa Band of Paiute Indians, • Kaibab Band of Paiute Indians, • Moapa Band of Paiute Indians of the Moapa River Indian Reservation, • Navajo Nation, • Paiute Indian Tribe of Utah, • Ute Indian Tribe of the Uintah and Ouray Reservation,	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	On 3/7/2023, project notification letters inviting the tribes to consult, and coordinate were sent. As of 4/4/2023, there have been no responses to the notification letters. Consultation is on-going.

• Ute Mountain Ute, • Zuni Tribe		

4.2 List of Preparers

BLM staff specialists, who determined the affected resources for this document, are listed in Appendix B (Interdisciplinary Team NEPA Checklist).

4.3 Appendices

A. Design Features

B. Interdisciplinary Team NEPA Checklist

C. Best Management Practices for Monarch Butterflies

4.4 ePlanning Documents

https:/eplanning.blm.gov/eplanning-ui/project/2011475/510

- Web Soil Survey Analysis Area Inventory Report
- Web Soil Survey Analysis Area Ecological Site Report
- Woodland Tree Growth Form and Morphological Characteristics
- Thinning Guidelines for Pinyon-Juniper

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Appendix A. Design Features

1.1 General

- Equipment will be stored in staging areas, using existing disturbed areas where possible. No vegetation clearing will be required. Staging areas will be reclaimed (i.e. reseeding, re-contouring) after equipment is removed.
- Precautions will be taken to ensure that contamination by fuels, motor oils, grease, etc. does not occur and that such materials are contained and properly disposed of off-site. Inadvertent spills of petroleum-based or other toxic materials will be removed immediately or upon completion of the project.
- All trash and other waste will be properly contained, removed from the project area, and disposed of at the proper facilities each day. No open burning of trash will occur.
- A project inspector would be on site to ensure that adequate sagebrush cover is left during treatment.

1.2 Mechanical

- The machinery will be utilized when conditions will limit the amount of soil disturbance and compaction from the operation of the machinery (for example: dry well-drained soils, frozen ground, or snow-covered ground)
- The machinery will not be used on saturated soils or in muddy conditions (rut depth must not exceed 6" in depth).
- Mechanical treatments will not be implemented perpendicular to contours on areas with high or extreme erosion hazard ratings.
- Limit mechanical treatments to slopes which are 25-30 percent or less.
- Mechanical equipment will generally be operated during dry or frozen conditions to eliminate soil erosion.
- Mulch created by mastication or chipping operations will not exceed 6” in depth.

1.3 Lop and Scatter

- All cut material will be bucked to not exceed 4' in length. Useable juniper posts may be left in lengths of 8' to allow for post-project utilization.
- Cut material may be either scattered or piled.
- Scattered material will not exceed 24" above ground level.
- Where possible, cut material may be placed in ephemeral washes and draws. Care should be taken not to place materials in washes directly upstream of culverts or alongside roads.
- Piles will be placed at least 20' from all uncut trees and will be placed so as to minimize impacts to surrounding vegetation.
- Stump heights will not exceed 6".
- All live limbs and the main stem will be removed from stumps.

1.4 Herbicide Use

- Incorporate appropriate stipulations, mitigations, and conservation measures from the PEIS when using herbicides.
- Use the lowest effective application rate.
- Test small areas for unintended consequences prior to treating larger areas.
- Evaluate soil characteristics to determine the likelihood of herbicide transport by runoff, infiltration, or wind.
- Limit herbicide use on fine-textured and sandy soils, especially where soil can be transported onto adjacent areas potentially harming non-target vegetation.
- Carefully evaluate the use of herbicides on hot, dry, cold, wet, sodic (containing high levels of sodium), and saline (containing high levels of salt) soils.
- Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected.
- Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility.
- Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.
- Strictly follow all EPA labels for application, rates, disposal, etc.
- Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration) for species of concern in the area to be treated.

1.5 Cultural Resources

- A cultural resource survey will be conducted prior to initiating any site-specific project and determinations of eligibility and effect will be made by a BLM archaeologist in consultation with the State Historic Preservation Office.
- All historic properties will be appropriately marked and avoided or mitigated.
- If it is determined that not treating the vegetation on specific historic properties may increase erosion or promote illegal collection, these sites may be treated. Treatments within the boundaries of historic properties will need to avoid altering the characteristics that make these sites eligible. The SHPO will be consulted before any historic properties are treated.
- For all proposed treatments American Indian Consultation would occur at the earliest stage possible. Procedures for American Indian consultation and consultation with interested parties in the Section 106 process would follow the regulations defined in 36 CFR80 For all proposed treatments American Indian Consultation would occur at the earliest stage possible. Procedures for American Indian consultation and consultation with interested parties in the Section 106 process would follow the regulations defined in 36 CFR800.
- If previously unrecorded cultural resources are discovered, all activity will cease within 100 feet of the discovery and the authorized officer will be contacted. Work may resume, or may resume with stipulations, after the resource has been evaluated by a qualified archaeologist and the need for resource protection and/or consultation has been determined.

1.6 Lands

- Prior to project implementation, all Public Land Survey System markers that fall near to or within proposed treatment areas will be located and protected. Mineral survey corners should also be located and protected.
- BLM will determine if any existing facilities may be affected by the project. If a facility might be affected, the right-of-way holder or other owner will be notified and appropriate precautions for the protection of facilities will be taken. BLM will make Blue Stake location requests if needed.
- Any pending or authorized lands and realty actions in the project area would not be substantially affected by the Proposed Action as long as measures are taken to assure all rights by grant, permit or lease holders are upheld. Prior to land surface disturbing activities in the vicinity of potential lands projects, the lands and realty staff should be notified to assist in locating existing or pending lands actions that may be impacted.

1.7 Livestock Grazing Management

- Range improvement projects (fences, water developments, pipelines, corrals, cattle guards) will be identified, protected, and repaired if damaged by treatment activities.
- Projects will be scheduled based on pasture rotation schedules to minimize impacts to permittees.
- Non-use agreements with the grazing permittee(s) in the allotment(s) where treatments are planned will be obtained prior to implementing vegetation projects. Non-use agreements may exceed 2 years if the treatments, through monitoring data, are found to be unsuccessful and re-treatment will need to occur.
- Temporary fences may be considered to ensure that habitat restorations are rested from livestock grazing for a minimum of 2 years.
- Habitat restorations will be rested from livestock grazing for a minimum of 2 years to determine success towards meeting management objectives. Vegetative monitoring data will be collected in accordance with approved BLM Technical References and Handbooks. If Key Management Areas do not already exist within the treatment areas, they will be established. Monitoring methodology including nested frequency, point cover, line intercept, etc. may be used to determine the success of the treatment. It is expected that some of the key management areas that are established in association with implemented projects may be adopted for long-term monitoring.

1.8 Noxious Weeds

- Noxious weed infestations are spread in part by the movement of vehicles/equipment, humans, animals, including livestock, by the transport of seed through physical contact and/or ingestion, wind, and water ways. With any disturbance weed invasion could occur, to eliminate potential avoid areas and locations with known infestations to eliminate chances of spreading noxious weeds within the project area. Across some of our landscapes, noxious weeds monocultures are replacing our native plant populations and reducing or eliminating biodiversity. They reduce forage for wildlife and livestock and reduce habitat for other animals. Characteristics which allow them to be invasive and difficult to control is that they

are aggressive, prolific seed producers, produce seeds which lay dormant for decades, have extensive root systems, thorns or burrs for protection and they produce chemicals which inhibit growth of surrounding vegetations. So, with prevention and control of the invasion, progress can be made. As with most things, prevention is preferable to the cure.

- To eliminate the spread of noxious and invasive weeds, all equipment and vehicles will be power washed at a local car wash or other acceptable facility prior to travelling to the project area. Cleaning will concentrate on tires and tracks and the undercarriage, including axles, frame cross members, mufflers, converters, running boards, etc. This will help remove plant debris, seeds, soil and mud from equipment and vehicles.
- Treatments proposed for areas without weeds will be given priority for treatment over areas with uncontrolled weeds. Noxious weed treatments will be initiated as needed prior to project implementation if it is determined that planned ground disturbing activities will contribute to the establishment or expansion of noxious weed populations. If using equipment/vehicles or implements prior to ground disturbing activities a 100-foot buffer is necessary from any known weed infestation to avoid spreading seed across the landscape. Equipment operators need to be familiar with identifying any Noxious weeds that are defined as those which are listed by the Utah Commissioner of Agriculture under the Noxious Weed Act, and those declared noxious by the Iron County or Beaver County Weed Board, so they can avoid disturbance to any of these sites.
- Treated areas will be monitored by the project administrator for noxious weeds during the spring and summer, especially during the first- and second year following treatment. If infestations are found, they will be recorded in CCFO database and Noxious weeds will be controlled when detected by manual or chemical treatment.
- If situations warrant determined by the project inspector if seeding efforts are needed to potentially eliminate invasive and noxious weeds from coming into the disturbed sites. Seed used will be certified weed free.

1.9 Recreation

- All primitive campsites and OHV staging areas within the treatment area should be buffered to some degree to protect the recreational experience.

1.10 General Wildlife

- Personnel implementing the project will be informed of big game hunting seasons.
- Minimize project implementation activities from Dec 1 to Mar 1 and avoid Mar 1 to Apr 15 to avoid disturbance to wintering mule deer during most crucial portions of wintering period.
- Avoid large expanses of clear-cut areas and provide diversity of age class Pinyon and Juniper for a diversity of wildlife habitat values. Maintenance projects should include efforts to feather young age class into older age class pinyon and juniper.
- Any vegetation projects occurring in older age class sagebrush or drainages should include pygmy rabbit surveys prior to implementation. If pygmy rabbit occupancy is verified, apply most appropriate BMP’s which may include avoidance of at least 300 feet.
- Any raptor nest found within a treatment area will be protected and managed according to Best Management Practices for Raptors and Their Associated Habitats in Utah (BLM,

August 2006), Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City, Jan. 2002) or in accordance with the most current policy in place at the time of treatments.

- Minimize habitat restorations during the migratory bird nesting season from April 1st -July 15th to protect migratory bird breeding and nesting. If habitat restorations during the nesting season cannot be avoided, then a qualified biologist should conduct nest searches to locate active nests. Active nests, as indicated by intact eggs, live chicks, or presence of an adult on a nest, will be buffered with a minimum 100-foot buffer or in accordance with the species for which protection is needed.
- Mexican Spotted Owl and Utah Prairie Dog surveys will occur prior to implementation if within project area, as necessary. Best management practices will be implemented if occupancy is verified.

1.11 Sensitive Wildlife Species

- Pygmy rabbit:
  - No off-road travel, surface use, or otherwise disruptive activity would be allowed within 300 feet of occupied pygmy rabbit habitat as determined through wildlife clearance surveys prior to implementation.
- Greater sage-grouse seasonal restrictions:
  - The project area contains winter, brood and nesting habitat, which are protected during the following periods:
    - November 15 – March 15 for winter habitat
    - February 15 – June 15 for breeding (leks), nesting and early brood-rearing habitat
    - April 15 – August 15 for brood-rearing habitat

1.12 Sensitive Plants

- BLM resource staff would determine the presence or absence of *Penstemon pinorum* prior to mechanical (including lop and scatter) and herbicide treatments. Which includes verifying the documented occurrences in 1990.
- Herbicide broadcast would not be allowed in special status plant habitat. Dependent on presence or absence of Penstemon pinorum. A ¼ mile buffer would be included around special status plants to avoid drift from herbicide treatments.
- Ecological sites supporting dense, healthy populations of sensitive plants would be flagged and avoided and no treatments would occur within these areas.

1.13 Migratory Birds

1.13.1 Non-Raptor Species

- No surface use, ground disturbance or otherwise disruptive maintenance activities will be allowed from April 1 through July 31. Surveys are required for all migratory bird species protected under MBTA if project activities occur during active nesting season.

If project activities are unavoidable during this timeframe, then:

- Migratory bird nest surveys shall be conducted prior to any project disturbance activities.
- Migratory bird nest surveys shall be completed 72 hours prior to any disturbance activities.
- Field surveys shall be conducted according to protocol and determined to be unoccupied by the BLM authorized officer prior to surface disturbance activities.
- Active nests that are found will have at least a 100-foot buffer or species-specific seasonal nesting restrictions and appropriate nesting buffers shall be applied.
- Biological monitors will continue to monitor active nests until such time as it is determined that the nest is no longer active and buffers can be lifted, allowing activities to occur.

1.13.2 Raptor Species

- Avoid surface use, ground disturbance, vegetation clearing, or disruptive maintenance activities during migratory nest season from January 1 through August 31 based on surveys and species occupancy (refer to species specific dates). Surveys are required for all raptor species if project activities occur during active nesting season.

If project activities are unavoidable during this timeframe, then:

- Field surveys shall be conducted according to protocol and determined to be unoccupied by the BLM authorized officer prior to surface disturbance activities. If nesting sites are identified because of the surveys, appropriate buffers and timing limitations will be implemented in accordance with BLM's Best Management Practices for Raptors.
- Raptor nest surveys shall be conducted within priority habitats prior to any project disturbance activities.
- Migratory bird nesting surveys shall be completed 72 hours prior to any disturbance activities.
- Field surveys shall be conducted according to protocol and determined to be unoccupied by the BLM authorized officer prior to surface disturbance activities.
- Species-specific seasonal nesting restrictions and appropriate nesting buffers shall be applied to known active nests (Romin and Muck, 2002).

1.14 Pinyon Jay

- Avoid surface use, ground disturbance, vegetation clearing, and disruptive maintenance activities from March 1 – May 30 in pinyon jay habitats.

If project activities are unavoidable during this timeframe, then:

- Pinyon jay nesting colony clearance surveys shall be conducted prior to any project disturbance activities.
- Pinyon jay nesting colony clearance surveys shall be completed 72 hours prior to any disturbance activities that will remove soil and vegetation.
- Colony nest clearance surveys shall be conducted according to protocol.
- Active nesting colonies that are found will have at least a 1,200 m (0.7 miles) buffer.

- Biological monitors will continue to monitor active nesting colonies until such time as it is determined that the nests are no longer active and buffers can be lifted, allowing activities to occur.
- Identified and mapped pinyon jay nesting colony areas will be protected as pinyon jays return to use the same nesting areas from the year before and a 1,200 m (0.7 miles) buffer to protect the mapped nesting colony.
- Surveys will be conducted according to the guidelines found in the "Conservation Strategy for the Pinyon Jay (*Gymnorhinus cyanocephalus*)" (Version 1, February 2020)

1.15 Woodland/Forestry

- Woodland and forest inventories would be completed as part of the planning tools in preparation for management actions. It may be desirable to complete more in-depth inventories for high-valued habitats and special sites.
- Silvicultural input and/or prescriptions would be prepared as a part of project design for management actions in woodland components.
- Trees infected with disease (i.e. dwarf mistletoe) would generally be removed. The treatment would depend on the degree of infection; trees with high infection and adjacent to uninfected trees would be removed to reduce the potential for the spread of mistletoe.
- Where pinyon pine trees are to be removed and 100% tree removal is not required to achieve project objectives (thinned areas), leave quality pinyon pine for the production of pine nuts and other amenity values, including recreational values and wildlife habitat. Thinning guidelines provided in "Preliminary Thinning Guidelines Using Stand Density Index for the Maintenance of Uneven-aged Pinyon-Juniper Ecosystems" (Appendix I) may be used to achieve various resource management goals.
- Where pinyon-juniper stands are to be thinned, retain uneven-aged conditions in after-treatment stands; retain pinyon and juniper with old growth characteristics (broad, non-symmetrical tops, deeply furrowed bark, twisted trunks or branches, dead branches and spike tops, large lower limbs, trunks containing narrow strips of cambium, hollow trunks, large trunk diameters relative to tree height, and branches covered with bright yellow green lichen.

1.16 Range Monitoring

- Pre- and Post- project monitoring will occur through vegetative monitoring data for 3 years will be collected at Key Areas established within the treatment using the CCFO Nested Frequency and Photo point protocol.
- Any seeded areas will be rested from livestock for a minimum of two growing seasons.

1.17 Mule Deer Winter Range Design Features

1.17.1 Planning

Prior to delivery of any habitat treatment, careful consideration of treatment design and capacity needs to occur by the BLM ID Team. There are several issues surrounding

habitat treatments that, if not considered during the design phase, could ultimately result in effectively reducing the quality of habitat in treatment areas.

a. Identification of highest priority areas - Across much of the IMW, winter range appears to be the most limiting habitat type. However, this may not always be the case. Prior to conducting habitat treatments for deer, habitat components that are most likely limiting the deer population in the area should be identified and assessed. Data from the Desired Components Index calculated in UDWR Big Game Range Trend assessments provide limiting factors to mule deer winter range and should be given priority.

b. Development of a comprehensive habitat treatment plan - Prior to initiating treatments, a landscape level treatment plan that coordinates treatment efforts over many years is necessary. Without a comprehensive plan, treatments are likely to occur in piecemeal efforts and will not be integrated with one another. The potential for reducing effectiveness increases greatly without *a priori* planning on the landscape and or Environmental Analysis level. Ideally, the treatment plan should be based on ecological attributes across a broad landscape rather than exclusively on land ownership and administrative boundaries.

c. Treatment scale and design - Treatments should be large enough that they are not overwhelmed by ungulate use. This goal is best accomplished by conducting many smaller treatments separated by cover rather than conterminous large treatments. A high edge to treated area ratio with irregular edges and visual barriers should be maintained (i.e., avoid geometric shapes). In particular, Reynolds (1966) demonstrated that deer use of treated areas decreased beyond 590 feet from an edge. Thomas et al. (1979) predicted that smaller treatment areas (approx. 5 acres) would receive more use than larger areas (≥25 acres) (Fig. 21).

    i. For each section (640 acres) of PJ, 1/4 should remain unmanaged and should have at least 60% PJ cover (if existing cover is <60%, these areas should be allowed to develop to >60% cover), 1/4 should be thinned to no less than 30% PJ cover, and the remaining 2/4 can be thinned to no less than 10–15% cover. Further, no unmanaged stand should be less than 40 acres.

    ii. No point within the treatment area should be more than 660 ft from cover. For logistical purposes, cover is defined as any stand of trees ≥ 40 acres.

d. Consideration of competition treatments should not be considered in areas where they are likely to receive detrimental ungulate use during the initial revegetation phase. Although some grazing can be beneficial (e.g., salting oak brush so cattle

will break it down; using domestic sheep or goats to help control noxious species), the unintended grazing and browsing of desirable seedling plants before they become established and vigorous can reduce deer use to less than pre-treatment levels.

1.17.2 Treatment Delivery

e. Reseeding - Most mechanical treatments and prescribed burns on winter ranges with 15 inches of annual precipitation, reseeding may not be imperative, but might improve the treatment effect. In a best-case scenario, reseeding can be used in conjunction with planting seedlings of preferred species. Efforts to reestablish preferred species are a necessity from a plant recovery standpoint.

f. Seed type and quality - Diverse seed mixtures of native and beneficial non-native species, preferably seed from sites with similar conditions, should be used when reseeding. Use of a seed mix increases community structure and function, initiates natural succession processes, increases probability of success, improves ground cover and watershed stability, and increases habitat diversity (Stevens 2004). Non-invasive, nonnative forbs (particularly nitrogen-fixing legumes) with high palatability (e.g., alfalfa [Medicago sativa], small burnet [*Sanguisorba minor*], and sainfoin [*Onobrychis viciifolia*]) can also be used along with native species. Non-native grasses (e.g., crested wheatgrass, smooth brome [*Bromus inermis*], orchardgrass [*Dactylis glomerata*]) should only be used for soil stabilization or to prevent site-dominance by invasive exotic species. Prior to treatment, a seed mixture of pure live seed (PLS) should be in hand and tested for quality. Date, method, depth of seeding, germination rates, and compatibility of different species should also be considered (Monsen and Stevens 2004, Stevens and Monsen 2004). Finally, prior to distributing seed, effectiveness of the delivery mechanism to be employed should be evaluated for each type of seed in the mix. Seeds establish at different rates and therefore need to be distributed at different rates (Stevens 2004).

g. Browse establishment - One of Wallmo's (1978) axioms of mule deer habitat management was that more browse is preferable to less browse. Most winter range treatments should be done with the intention of increasing useable browse for deer. Reseeding shrubs, shrub transplants, and stimulating leader growth of extant shrubs should be priorities for most winter range treatments.

h. Where commercial seed collection operations occur on public lands, permits should require that an adequate number of seed is left for shrub seedling

recruitment within the harvested stand. Also, “nursery plots” of shrub species whose seed is difficult to acquire are recommended.

i. Road avoidance - Treatment areas should be well screened from roads whenever possible by leaving trees and shrubs along travel corridors. Roads into treatment areas should be blocked whenever possible.

1.17.3 Post-Treatment Assessment

j. The treatment plan should include monitoring to evaluate treatment results. This should include pre-treatment and periodic post-treatment vegetation measurements to evaluate species composition and abundance. Ideally this assessment should also include some measure of use (e.g., cage clipping studies). Pellet counts are commonly used but are probably of questionable value for assessing use.

k. Follow-up - If post-treatment assessment indicates treatment results are unsatisfactory (e.g., seeding is ineffective, invasion of noxious weeds) an a priori commitment should be made to conduct follow-up treatments. In most circumstances, follow-up treatments will involve further seeding or herbicide application to control undesirable species.

l. Eliminate the creation of new roads through active monitoring and rehabilitation management of these routes resulting from treatment operations.

1.17.4 Pictures of Successful PJ Treatments for Mule Deer

Most immediate gains in mule deer habitat could be attained by managing piñon-juniper communities to increase forage quantity and quality, but care must be taken to preserve adequate amounts of cover for mule deer (Bender et al., 2007b, 2008, 2011; Hoenes, 2008; Bender, 2010, 2020; Hoenes and Bender, 2012).

Mule deer require cover as well as forage. Thus, habitat treatments, such as thinning of the juniper canopy shown here, need to leave dense patches of trees or shrubs for cover adjacent to

treatments or treatments may not be used by deer. (Photo courtesy of A. Darrow.)

Thinning juniper in desert mountains can free more light and other nutrients for more valuable mule deer forages such as mountain mahogany. Thinning as a savannah, as pictured here, provides forage, thermal cover, and security cover in close proximity at any point on the range. (Photo courtesy of M. Weisenberger.)

Appendix B: Interdisciplinary Team Checklist

INTERDISCIPLINARY TEAM NEPA CHECKLIST

Project Title: Escalante Valley Habitat Restoration EA
NEPA Log Number: DOI-BLM-UT-CO10- 2023-0003-EA
File/Serial Number:
Project Leader: Mitch Bayles

DETERMINATION OF STAFF: ***(Choose one of the following abbreviated options for the left column)***

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA. **The NEPA Handbook states that issues need to be analyzed in detail if: 1) Analysis of the issue is necessary to make a reasoned choice between alternatives; 2) The issue is significant...or where analysis is necessary to determine the significance of impacts.**
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form.

RESOURCES AND ISSUES CONSIDERED:

Determi-nation	Resource	Rationale for Determination	Signature	Date
NI	Air Quality	The Project area is currently meeting National Ambient Air Quality Standards (NAAQS). Nothing in the proposal would alter air quality in the long term.	Mitch Bayles	9/27/2022
NP	Areas of Critical Environmental Concern	There are no ACECs within the CCFO	Dave Jacobson	10/3/2022
NI	Cultural Resources	A literature review was conducted to identify known cultural resources and the potential for cultural resources in areas not previously inventoried. On 3/6/2023 SHPO concurred with the plan for phasing this undertaking and concurred with the APE and identification efforts. Following the phased approach, a Class III surveys will be conducted and consultation with UT SHPO will be conducted prior to implementation. Based on several criteria a recommendation will be made to SHPO for either avoiding or treating vegetation on historic properties, so long that either decision will not result in an adverse effect to the site. Cultural recourses determined Not Eligible to the National Register of Historic Places (NRHP) may be impacted by project activities. Given these conditions, as well as the design features, the project should have No Effect to Historic Properties or No Adverse Effect determination.	Roy Plank	4/4/2023
NI	Environmental Justice	No minority of low-income populations would be disproportionately affected by the proposed action or alternative.	Mitch Bayles	9/27/2022
NI	Farmlands (Prime or Unique)	There may be soils in the project area with potential to be prime, unique or important farmlands, but as no irrigation water is supplied to any of the lands proposed they do not currently qualify.	Mitch Bayles	9/27/2022
NI	Floodplains	The project has been reviewed against Executive Order 11988 and the proposal has been determined to conform since the project would not affect the functionality of the floodplains, nor would the floodplain be disruptive to the project.	Erica Shotwell	10/19/2022
NI	Fuels/Fire Management	These types of treatments in the proposed action can positively affect fuels and fire from the standpoint of fire	Martin Esplin	9/15/22

Determi-nation	Resource	Rationale for Determination	Signature	Date
		management. Removing or putting Pinion Juniper trees on the ground with mechanical treatments reduces fire severity potential of these species of trees. Fuels that are mulched, pushed down, or cut down will not burn with the same intensity in a fire as they would when left standing. The establishment or re-establishment of beneficial plant species that are fire resistant and/or resilient through seeding helps the landscape be fire tolerant or manageable in fire events. Plateau herbicide is a pre-emergent designed to target and prevent cheat grass from germinating which becomes a fine flashy fuel after its short growing season typically in early spring that potentially cause easy fire ignitions and facilitates fast moving fires. Such treatments have positive effects regarding fuels and fire management.		
NI	Geology / Mineral Resources/Energy Production	**Newcastle project component:** The known mineral resources for this portion of the project are common variety deposits of sand and gravel and geothermal resources. The project areas falling within sections 20, 29 & 30 are all within known geothermal resources area and all of the federal land in section 20 is currently under federal lease UTU-87418. Lease operations covering exploratory well drilling are currently authorized for a small acreage within that leased area, this being in the S2SENESW sec. 20. ***Provided these ongoing lease operations are not disturbed, the proposal would have no impact on lease operations.*** It should be noted that the natural geothermal heat flow in the same immediate area that the lease operations are being carried out is very high, creating above average soil temperatures and soil drying that have led to that area having monocultures of cheatgrass. That heat flow will have an adverse effect on any attempts to reintroduce desirable vegetative species in the NESW sec. 20. **Websters Knolls project component:** The known mineral resources for this portion of the project are common variety deposits of sand and gravel. The lands are prospectively valuable for geothermal resources. While there are no current minerals-related authorizations on the project lands, all of the project lands are part of areas nominated for leasing in the upcoming 2023 geothermal lease sale.	Ed Ginouves	9/12/22
NI	Greenhouse Gas Emissions	The proposed project would not affect greenhouse gas emissions to a degree of detailed analysis. Mechanical tools would be used to implement the majority of the treatments resulting in some greenhouse gas emissions. Emissions are anticipated to be below the EPA GHG reporting limit of 25,000 tons per year. Short-term loss of carbon storage may occur due to biomass removal, but most evidence suggests that fuels treatments can reduce carbon-loss from wildland fire emissions over the long term. Soils store over 2/3 of carbon of Federal lands in Utah and the reduction in biomass carbon storage from the Proposed Action will be small compared to the total land sequestration capability. Net changes in carbon storage are not quantifiable as it varies based on vegetation type, vegetation density, vegetation regrowth weather and other factors. The largest changes in ecosystem carbon sequestration occur from land use land cover change (LULCC). The habitat and vegetation	Mitch Bayles	9/27/2022

Determi-nation	Resource	Rationale for Determination	Signature	Date
		management does not result in LULCC but instead is designed to improve the health of existing habitats so that they are more resilient against changing from a sagebrush steppe to grasslands (specifically cheatgrass) after disturbances such as wildfires. Grasslands not only store less above ground than sagebrush steppe environments, but also change the fire regime to more frequently occurring wildfires and additional GHG emissions with the fires. While increased woodland cover (primarily pinyon juniper) results in increased above ground carbon storage, it also results in higher GHG emissions during wildfires and degrades the sagebrush steppe ecosystem, so it is less likely to recover and more likely to change to grassland after a wildfire.		
NI	Invasive Species/Noxious Weeds	NI if added design features are adhered to. With any disturbance and soil movement there are chances of spreading noxious weeds. ***With known weeds present within the project area (see map of locations) of scotch thistle, it is important that avoidance of these areas occurs and that the incorporated design features are adhered to.*** CCFO has a very active noxious weed program and with these proper design features and continued treatments keeping weed populations as small as possible and eliminating populations will allow for proper vegetation and habitat to continue and to sustain a healthy rangeland.	Jessica Bulloch	9/12/2022
NI	Lands/Access	NI as long as all right-of-way (ROW, lease, or permit holders' valid existing rights are honored. Currently in the Escalante Valley Bench project area contains no right of ways and access to the area would be via the Iron County Class B road known as "Lehi Wood Trail". Other routes into the area are via private land options. The Escalante Valley Bench New Castle project are containing ROWs within a major ROW corridor with a major transmission line, two natural gas lines, and multiple minor ROWs. The project area seems to avoid these ROWs with the exception of UTU-83067, Sigurd to Red Butte 345kV transmission line. Access to the area would be via the Iron County Class B road known as "New Castle Bench Road".	Brooklyn Cox	9/19/2022
NP	Lands with Wilderness Characteristics	The proposed action is not within any areas that were identified as having wilderness characteristics in the 2011 or updated 2014 inventory.	Dave Jacobson	10/17/2022
PI	Livestock Grazing	For a short-term livestock grazing would be impacted by the need to rest the areas selected for seedings for at least two growing seasons, or as needed until plants are adequately established. Long-term the treatments would be beneficial due to the increased vegetation diversity and increased forage production. This may shift livestock use patterns, enhance livestock distribution, and moderate overall forage utilization levels and rates. NI if design features are incorporated to work with grazing schedules.	Mitch Bayles	9/27/2022
NI	National Historic Trails	The portion of the proposed treatment area south of Newcastle is directly adjacent to the Old Spanish National Historic Trail. The historic setting along this segment of the trail is heavily impacted by powerlines and other modern	Dave Jacobson	1/23/2023

Determi-nation	Resource	Rationale for Determination	Signature	Date
		disturbance present on the landscape. The proposed action would not impact the current setting or vicarious setting for those traversing the NHT3 route.		
NI	Native American Religious Concerns	On 3/7/2023, project notification letters inviting the tribes to consult, and coordinate were sent to the following Tribes: Hopi Tribe of Arizona, Moapa Band of Paiute Indians, Kaibab Band of Paiute Indians, Moapa Band of Paiute Indians of the Moapa River Indian Reservation, Navajo Nation, Paiute Indian Tribe of Utah, Ute Indian Tribe of the Uintah & Ouray Reservation, Ute Mountain Ute, Zuni Tribe As of 5/5/2023, there have been no responses to the notification letters.	Roy Plank	5/5/2023
NI	Paleontology	The surficial geology of both treatment areas is mapped as alluvium and colluvium whose parent materials are volcanic rocks. Using the Bureau's Potential Fossil Yield Classification System, the sediments would fall within Class 2, Low Potential, for the presence of vertebrate fossils or scientifically significant invertebrate fossils. As the probability for impacting any fossil resources is low, no pre-work assessment or project mitigation measures are necessary.	Ed Ginouves	9/12/22
PI	Rangeland Health Standards	Currently, the Standards and Guides are being partially met within the project in the sagebrush/grassland community. Perennial grasses are lacking annual production and reproductive capability of plants. Drought and historic livestock grazing were the causal factors for non-attainment. Pinyon and juniper are also dominant in the upper elevation in a portion of the project resulting in a lack of herbaceous understory. A vegetation project would be expected to improve vegetative conditions and enhance the treatment area's ability to meet the Rangeland Health Standards and Guidelines. Removal of pinyon and juniper trees, decadent sagebrush, and subsequent reseeding would improve upland soil and biotic components of the treatment area. See vegetation section in Chapter 3.	Mitch Bayles	9/27/2022
NI	Recreation	The proposed treatment will not impact the dispersed types of recreation which occur throughout the CCFO. Hunting and OHV and vehicular exploring should not be impacted by the proposed action.	Dave Jacobson	10/17/2022
NI	Socio-Economics	The long-term impacts of the project would be increased herbaceous vegetation in areas, which would allow for more effective livestock distribution throughout the affected allotment. These impacts would not change the overall socio-economic condition of the permittees.	Mitch Bayles	9/27/2022
PI	Soils	The proposed project would have minor direct impacts to soils where machines, would disturb the soil surface in some areas. These impacts would be short-term as the project would also be expected to indirectly improve soil conditions in areas that are lacking desirable vegetation communities to stabilize soils. Particularly areas with closed-canopy P/J without understory vegetation and decadent late seral sagebrush communities lacking desirable grasses and forbs. The proposed project would open the tree canopy in those areas and promote early seral stages within both vegetative communities. These areas would be seeded with desirable	Mitch Bayles	9/27/2022

Determi-nation	Resource	Rationale for Determination	Signature	Date
		understory species which would be expected to improve soil conditions in much of the project area. Suitability review should be performed for each specific treatment.		
NI	Special Status Plants	No BLM Special Status Plant Species are present or adjacent to the proposed project area after review of the State and BLM GIS layers. Special status plant surveys will need to be completed prior to vegetation treatments at the project locations. Surveys will need to be done if soil data reports show potential soil, geology or ecosite characteristics that could indicate that the plants on the BLM sensitive plant list known to occur within the Cedar City Field office have potential to be exist. Stipulations will be added to the EA to avoid or mitigate any SS plant species found to occur.	Mitch Bayles	9/27/2022
PI	Vegetation	Currently, there is encroachment of pinyon pine and juniper into sagebrush steppe community. There are also areas that are dominated by pinyon, juniper, and sagebrush stands that lack species and age-class diversity. Understory vegetation, particularly perennial grasses are limited within these areas. It would be expected that the vegetation project would provide for a diverse composition and production of perennial grasses, forbs, and shrubs. Vegetation manipulation methods would be identified by the ID Team in the Proposed Action.	Mitch Bayles	9/27/2022
NI	Visual Resources	The proposed action is within VRM class IV and will meet the VRM class IV objectives.	Dave Jacobson	10/17/2022
NI	Wastes (hazardous or solid)	There are no known waste issues currently associated with the proposed project area. Use of construction equipment introduces a threat only if an unforeseen incident or malfunction occurs with the equipment. However, this threat is unlikely due to the probability and minimal quantities of product utilized. If an unforeseen incident should occur, reporting and mitigation is required. Mitigation should comply with local, state, and federal.	Travis Carlson	09/19/22
NI	Water Resources/Quality (drinking/surface/ground)	Surface Water - There are no springs, perennial resources within the analysis area. The analysis area is within the semi-desert valley where surface waters present are from small ephemeral washes and flow only in response to intense weather events. Although initial disturbance as discussed in the "soils" section would be expected and could increase sediment within the watershed, successful re-seeding, reduction of bare ground and improvement of vegetation communities would be expected to reduce erosion and sediment loading into the watershed by slowing water and increasing water retention. Ground Water- See "Minerals/Geology and energy production" section regarding geothermal exploration and leases. Ground water would not be expected to be impacted from the proposed project.	Erica Shotwell	10/19/222
NP	Wetlands/Riparian Zones	There are no known riparian or wetland zones within the project area.	Erica Shotwell	10/19/22
NP	Wild and Scenic Rivers	There are no designated wild or scenic rivers within the CCFO.	Dave Jacobson	10/3/2022

Determi-nation	Resource	Rationale for Determination	Signature	Date
NP	Wilderness/WSA	There are no WSAs or wilderness within or near the proposed treatment area.	Dave Jacobson	10/3/2022
NP	Wild Horses	The project is not within any HA or HMA.	Chad Hunter	9/19/22
PI	Wildlife & Fish	Project area includes mule deer winter range, individual projects should follow BMP's and balance food and cover needs by creating islands and mosaic patterns or manage PJ stands for <40% cover as per mule deer habitat guidelines. The proposed area also includes year-long pronghorn habitat (avoid disturbance May 1 to June 30).	Dustin Schaible	9/27/22
NP	Wildlife - Greater Sage-Grouse	Proposed project area does not include PHMA.	Dustin Schaible	9/27/22
PI	Wildlife – Migratory Birds	Various migratory birds are found within and utilize the habitat within the project area including but not limited to bald eagle, Clark's grebe, olive-sided flycatcher, pinyon jay, and Virginia's warbler. Avoid project disturbance activities during migratory bird nesting season (January 1 – August 31) to the greatest extent possible. If this is not possible, then avoid any habitat alteration, removal, or destruction during the primary nesting season for migratory birds (March 1 – July 31). The proposed habitat restoration project may potentially impact migratory birds through altering habitat. This would displace migratory birds, and a shift in species utilizing the area would be expected. Certain populations of species of migratory birds may benefit, while others may have adverse impacts. USFWS (2002) has advised that raptor surveys for a minimum three-year period prior to the start of project implementation to be conducted. Where feasible, pre-project surveys should include at least one cycle of a known prey's population fluctuation. A pinyon jay nesting colony has been located next to the proposed project area on USFS south of the New Castle treatment area. Pinyon jay nesting colony surveys are recommended to be conducted March 1 – May 31 to avoid disturbance to nesting pinyon jay colonies through mitigation efforts, such as buffers and seasonal timing restrictions.	Derek Christensen	9/22/2022
NI	Wildlife-Special Status (not TEC)	Based on available GIS layers, sensitive species that may occupy the area may include bald eagle, burrowing owl, ferruginous hawk, fringed myotis, kit fox, northern goshawk, pygmy rabbit, short-eared owl, spotted bat, and townsend's big-eared bat. NI if BMP's for migratory birds, kit fox, and pygmy rabbit can be adopted as design features.	Dustin Schaible	9/27/22
NI	Wildlife T&E and Candidate	No mapped Utah prairie dog habitat exists within 0.5 mi of the proposed project area and contains unsuitable habitat. No designated critical habitat for threatened, endangered, or candidate species are found within or reasonably near the	Derek Christensen	9/22/2022

Determi-nation	Resource	Rationale for Determination	Signature	Date
		proposed project area. California condor has the potential to utilize the project area for foraging, but no impact is expected to occur to the California condor. There is no suitable habitat for Southwestern Willow Flycatcher within the project area. Monarch Butterfly, a candidate species, has the potential to occur within the proposed project area. The BLM is recommended to follow the mitigation measures found in Western Monarch Butterfly Conservation Recommendations (USFWS, 2021) by protecting milkweed species for breeding and herbicide application timing. NI if conservation recommendations are followed from the Western Monarch Butterfly Conservation Recommendations (USFWS, 2021).		
PI	Woodland / Forestry	Majority of areas contain sage/grass/forb and areas of recently burned pinyon and juniper with 90-100% mortality. Other areas contain green pinyon and juniper consisting of mostly phase I and II encroachments. Woodland/Forestry resource will need to be analyzed in detail.	Colby Peterson	09/14/22

Appendix C: Best Management Practices for Monarch Butterflies

1.1 Monarch Butterfly

- Use only native, insecticide-free plants for habitat restoration and enhancement actions.
- Identify and protect existing habitat, and planting milkweed species and flowering plants that are appropriate for the location.
- Conduct management activities such as mowing, burning and grazing in monarch breeding and migratory habitat outside of the estimated timeframe when monarchs are likely present (May 1 – October 31).
- Protect monarchs, other pollinators, and their habitats from pesticides (i.e., insecticides and herbicides).
    - Avoid the use of pesticides when monarchs may be present (May 1 – Oct 31), when feasible.
    - Screen all classes of pesticides for pollinator risk to avoid harmful applications, including biological pesticides such as *Bacillus thuringiensis.*
    - Avoid the use of neonicotinoids or other systemic insecticides, including coated seeds, any time of the year in monarch habitat due to their ecosystem persistence, systemic nature, and toxicity.
    - Consider non-chemical weed control techniques, when feasible.
    - Avoid herbicide application on blooming flowers. Apply herbicides during young plant phases, when plants are more responsive to treatment, and when monarchs and other pollinators are less likely to be nectaring on the plants.
    - Whenever possible, use targeted application herbicide methods, avoid large-scale broadcast applications, and take precautions to limit off-site movement of herbicides (e.g., drift from wind and discharge from surface water flows).
    - Separate habitat areas from areas receiving treatment with a pesticide-free spatial buffer and/or evergreen vegetative buffer of coniferous, non-flowering trees to capture chemical drift. The appropriate monarch and pollinator habitat spatial buffer size depends on several factors, including weather and wind conditions, but at a minimum, the habitat should be at least 40 feet from ground-based pesticide applications, 60 feet from air-blast sprayers, and 125 feet from any systemic insecticide applications or seed-treated plants.
- To minimize the spread of the pathogen *Ophryocystis elektroscirrha* (OE), do not plant non-native tropical milkweed (*Asclepias curassavica*). OE can build up on tropical milkweed and infect monarchs, because these plants are evergreen and do not die back in the winter. OE can be lethal to monarchs.
- Remove tropical milkweed that is detected and replace it with milkweed and nectar plants appropriate for the location.
- Report milkweed and monarch observations from all life stages, including breeding butterflies, to the Monarch Milkweed Mapper or via the project portal in the iNaturalist smartphone app.

Appendix D: Public Comments