

FINDING OF NO SIGNIFICANT IMPACT

LX RANCH LIVESTOCK GRAZING PERMIT RENEWAL FOR COX INDIVIDUAL ALLOTMENT (#00217)

DOI-BLM-OR-L050-2013-0025-EA

The Bureau of Land Management, Lakeview Resource Area (BLM), has analyzed several alternative proposals related to renewing term grazing permit number 3600243 for a ten-year period for the Cox Individual Allotment. The allotment is located approximately 12 miles northeast of Adel, Oregon, is about 1,796 acres in size, and contains about 1,246 acres of public land and 550 acres of private land.

An environmental assessment (EA) was prepared that analyzed the potential direct, indirect, and cumulative environmental impacts of three alternatives. The alternatives included No Action (continue current grazing), 50% reduction in grazing, and no grazing (see pages 6-8 of attached EA).

The Council on Environmental Quality (CEQ) regulations state that the significance of impacts must be determined in terms of both context and intensity (40 CFR 1508.27). The context of the proposed action is the Cox Individual Allotment. For this reason, the analysis of impacts in the attached Environmental Assessment (EA) is focused appropriately at this scale. The CEQ regulations also include the following ten considerations for evaluating the intensity of impacts:

- 1) Would any of the alternatives have significant beneficial or adverse impacts (40 CFR 1508.27(b)(1))?
() Yes (X) No

Rationale: Based on the analysis contained in the attached EA, none of the alternatives would have either significant beneficial or adverse impacts on the human environment. There are no prime or unique farmlands, water resources, fish and aquatic habitat, forest or woodland habitat, wild horse management areas, wild and scenic rivers, significant caves, designated wilderness areas, wilderness study areas, other areas with wilderness characteristics, ACEC/RNAs, threatened or endangered plants and animals, special status plants, hazardous waste sites, or low income or minority populations located in the project area. No measureable impacts would occur to climate air quality, floodplains, hydrology, land status, or mineral and energy resources (Table 3, page 10).

The potential impacts to existing soils, biological soil crusts, wetland and riparian areas, upland vegetation, noxious weeds, wildlife, special status wildlife species, livestock grazing management, native American traditional practices, cultural resources, recreation, visual resources, or social and economic values anticipated by the various alternatives have been analyzed in detail within Chapter 3 of the attached EA and found not to be significant (pages 9-39).

- 2) Would any of the alternatives have significant adverse impacts on public health and safety (40 CFR 1508.27(b)(2))? () Yes (X) No

Rationale: None of the alternatives analyzed in detail in the attached EA would have significant impacts on public health or safety because the project area is not located near any populated rural or urban area. For this reason, there would also be no impacts to low income or minority populations. Further, there are no known hazardous waste sites in the project area. There are no perennial streams or surface drinking water sources located in the project area. There would be no measureable impacts to air quality within and surrounding the project area (Table 3, page 10).

- 3) Would any of the alternatives have significant adverse impacts on unique geographic characteristics (cultural or historic resources, park lands, prime and unique farmlands, wetlands, wild and scenic rivers, designated wilderness or wilderness study areas, or ecologically critical areas (*ACECs, RNAs, significant caves*)) (40 CFR 1508.27(b)(3))? () Yes (X) No

Rationale: There are no park lands, prime or unique farmlands, wild and scenic rivers, significant caves, designated wilderness areas, WSAs, or ACEC/RNAs located in the project area (Table 3, page 10). Impacts to riparian and wetland vegetation are not significant and are described in Chapter 3 of the attached EA (pages 23-24).

4) Would any of the alternatives have highly controversial effects (40 CFR 1508.27(b)(4)? Yes No

Rationale: The BLM has extensive expertise planning, analyzing impacts, and implementing range management actions such as those proposed by the alternatives addressed in the attached EA. The potential impacts of these range management actions on soils, biological soil crusts, wetland and riparian areas, upland vegetation, noxious weeds, wildlife, special status wildlife species, livestock grazing management, native American traditional practices, cultural resources, recreation, visual resources, or social and economic values can be reasonably predicted based on existing science and professional expertise. The attached EA analyzed these impacts (pages 9-39). The nature of these impacts is not highly controversial, nor is there substantial dispute within the scientific community regarding the nature of these effects.

The public has been given an opportunity to review and comment on the analysis of effects. The BLM is not currently aware of any potential highly controversial effects, as defined under 40 CFR 1508.27(b)(4), but will review any comments received and address any substantive comments prior to signing this FONSI.

5) Would any of the alternatives have highly uncertain effects or involve unique or unknown risks (40 CFR 1508.27(b)(5)? Yes No

Rationale: The BLM has extensive expertise planning, analyzing impacts, and implementing range management actions such as those proposed by the alternatives addressed in the attached EA. The potential impacts of these range management actions on soils, biological soil crusts, wetland and riparian areas, upland vegetation, noxious weeds, wildlife, special status wildlife species, livestock grazing management, native American traditional practices, cultural resources, recreation, visual resources, or social and economic values can be reasonably predicted based on existing science and professional expertise. The attached EA analyzed these impacts (pages 9-39). The nature of these impacts is not highly uncertain nor does it involve unique or unknown risks.

6) Would any of the alternatives establish a precedent for future actions with significant impacts (40 CFR 1508.27(b)(6)? Yes No

Rationale: The BLM has extensive expertise planning, analyzing impacts, and implementing range management actions such as those proposed by the alternatives addressed in the attached EA. None of the alternative actions represents a new, precedent-setting range management technique or would establish a precedent for future similar actions with potentially significant effects.

7) Are any of the alternatives related to other actions with potentially significant cumulative impacts (40 CFR 1508.27(b)(7)? Yes No

Rationale: Based on the analysis contained within the Cumulative Effects section of Chapter 3 of the attached EA, none of the alternatives would have significant cumulative effects within the project area, even when added to the effects of other past, present, and reasonably foreseeable future actions (pages 36-39).

8) Would any of the alternatives have significant adverse impacts on scientific, cultural, or historic resources, including those listed or eligible for listing on the National Register of Historic Resources (40 CFR 1508.27(b)(8)? Yes No

Rationale: The allotment is located within an area which was used historically by native Americans. However, there are no known native American religious or sacred sites, Traditional Cultural Properties, or plant collecting sites known within the allotment. Potential impacts to cultural resources have been analyzed in Chapter 3 of the attached EA and found not to be significant (pages 29-31).

9) Would any of the alternatives have significant adverse impacts on threatened or endangered species or their critical habitat (40 CFR 1508.27(b)(9)? Yes No

Rationale: There are no threatened or endangered species or designated critical habitat within the project area (Table 3, page 10).

10) Would any of the alternatives have effects that threaten to violate Federal, State, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)? () Yes (X) No

Rationale: All of the alternatives analyzed in the attached EA comply with all Federal, State, and local environmental laws or other environmental requirements, including the requirements of the National Environmental Policy Act, Clean Water Act, Clean Air Act, and Endangered Species Act.

The Federal Land Policy and Management Act requires that any action that BLM implements must also conform with the current land use plan and other applicable plans and policies. The purpose and need for the proposed action conforms with the management direction contained in the *Lakeview Resource Management Plan/Record of Decision* (BLM 2003b). The alternatives analyzed in the EA conform to the management direction requirements of this plan and the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington* (BLM 1997), the *Greater Sage-Grouse Conservation Strategy and Assessment for Oregon* (ODFW 2005), the *Greater Sage-Grouse Interim Management Policies and Procedures* (BLM 2011), and the grazing regulations (43 CFR Part 4100) in varying degrees (see EA Chapter 1, pages 2-6 and Chapter 3, pages 9-39). Conformance with this direction will be addressed in more detail within the proposed decision as it represents important decision factors that I will consider in making my final decision (EA pages 2-3).

Finding

On the basis of the analysis contained in the attached EA, the consideration of intensity factors described above, and all other available information, my determination is that none of the alternatives analyzed would constitute a major federal action which would have significant adverse or beneficial impacts on the quality of the human environment. Therefore, an Environmental Impact Statement (EIS) is unnecessary and will not be prepared.

Thomas E. Rasmussen, Field Manager
Lakeview Resource Area

Date

LX Ranch Grazing Permit Renewal for Cox Individual Allotment (#00217)

ENVIRONMENTAL ASSESSMENT

DOI-BLM-L050-2012-0025-EA

Bureau of Land Management
Lakeview Resource Area
Lakeview District Office
1301 South G Street
Lakeview, Oregon 97630

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CHAPTER 1—PURPOSE AND NEED FOR ACTION

Introduction

The Lakeview Resource Area, Bureau of Land Management (BLM) has prepared this Environmental Assessment (EA) to analyze the potential effects of renewing term grazing permit #3600243 for a ten-year period for the Cox Individual Allotment. This EA serves as the analytical basis for compliance with the National Environmental Policy Act of 1969 (NEPA) and making a determination as to whether any significant impacts to the human environment would result from the proposal.

The allotment is located approximately 12 miles northeast of Adel, Oregon (Map 1). The Cox Individual Allotment is about 1,796 acres in size with 1,246 acres of public land and 550 acres of private land. The Cox Individual Allotment is comprised of 5 pastures and is grazed by one permittee (Map 2). However one of the pastures (160 acres) is comprised entirely of private land, is fenced and managed separately, and will not be included in the analysis in this EA. The authorized grazing level for the permit on public land within the Cox Individual Allotment is 74 AUMs.

Purpose and Need for Action

The Nature Conservancy leased the base property and transferred the associated grazing permit to LX Ranch in 2004. The base property lease was renewed in 2007 and 2010. The grazing permit for the allotment expired in 2010 at which time the permit renewal application was submitted for consideration by the permittee. At that time the BLM was unable to fully process the permit renewal; therefore the permit was renewed under the authority of Section 416, Public Law 111-88, until such time as the permit could be fully processed. The Nature Conservancy renewed the base property lease in 2013 and the permittee, LX Ranch, has applied for a 10-year term grazing permit.

The primary purpose of this analysis is to respond to the permittee's permit renewal application and consider whether or not to reissue or modify livestock grazing permit #3600243 associated with the Cox Individual (#00217) Allotment.

Decisions to Be Made

The authorized officer will decide whether or not to renew the Term Grazing Permit, and if so, under what terms and conditions.

Decision Factors

Decision factors are additional criteria used by the decision maker to choose the alternative that best meet the purpose and need for the proposal. These include:

- a) How well does the decision conform to laws, regulations, and policies related to grazing use and protecting other resource values?

- b) How well does the decision conform to the resource management plan or allotment-specific management direction?
- c) How well does the decision promote maintenance of rangeland health standards?
- d) How well does the decision conform with ODFW (2005) guidelines?
- e) How well does the decision conform with IM 2012-043 regarding interim sage-grouse management?

Consistency with Laws and Regulations

This EA has been prepared in conformance with the NEPA. Grazing permits are subject to renewal in accordance with the provisions of the Taylor Grazing Act (1934), Federal Land Policy and Management Act (FLPMA, 1976), Public Rangelands Improvement Act (1978), and applicable grazing regulations at 43 Code of Federal Regulations (CFR) Part 4100.

In order for an applicant to lawfully graze livestock on public land, the party must obtain a valid grazing permit or lease. The grazing regulations, 43 CFR 4130.2(a), state “grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans.” The permit renewal applicant (current permittee) controls the base property associated with the grazing preference on the allotment and has been determined to be a qualified applicant.

A performance review of the permittee’s past use has been completed and BLM found the permittee to have a satisfactory record of performance pursuant to 43 CFR 4110.1(b). This conclusion was based on: grazing utilization at acceptable levels; bills paid on time; actual use turned in annually; permit terms and conditions were adhered to, base property requirements met, and no history of livestock trespass or unauthorized use. The record of performance review is hereby incorporated by reference.

Conformance with Land Use Plan

Approved management actions must conform to the appropriate land use plan. The *Lakeview RMP/ROD* (BLM 2003b, as maintained) is the governing land use plan for the area and provides the following goals and management direction related to livestock grazing use:

Livestock Grazing Management Goal—*Provide for a sustainable level of livestock grazing consistent with other resource objectives and public land-use allocations* (Page 52).

Management Direction –

“The current licensed grazing levels (Appendix E1) will be maintained until analysis or evaluation of monitoring data or rangeland health assessments identify a need for adjustments to meet objectives. Applicable activity plans (including existing allotment management plans, agreements, decisions and/or terms and conditions of grazing use authorizations) will be developed, revised where necessary, and implemented to ensure that resource objectives are met. The full permitted use level for each allotment has been

and continues to be analyzed through individual allotment assessments, such as rangeland health and livestock grazing guidelines....” (Page 52).

“Rangeland improvement projects will be implemented to meet resource objectives... Range improvement projects that do not enhance resource values and meet management objectives will be abandoned and rehabilitated” (Page 53).

The Cox Individual Allotment is currently open or allotted to grazing use and is allocated for 74 AUMs of livestock forage and 70 AUMs of wildlife forage (page 46, Table 5, as maintained; Map G-3).

Appendix E1 – Allotment Specific Management Direction (Page A-37, as maintained)

Livestock distribution/management - *Improve livestock management and distribution through improved management practices, installation of livestock management facilities (such as fences and water sources), and/or other actions as opportunities arise.*

Improve/maintain range condition - *Use management practices and/or better animal distribution; develop range improvements when appropriate: adjust permitted use as needed.*

Riparian Condition - *A rangeland health assessment was completed. Standard 2 was not met because of impacts to the riparian area around the hot springs. This riparian area was excluded from grazing with an enclosure fence and standard 2 is now being met.*

Noxious Weed Encroachment - *Implement the current Weed Management Plan.*

Wildlife/Wildlife Habitat – *Follow the greater sage-grouse Livestock Grazing guidelines (pages 75-76 of ODFW 2005), where appropriate.*

Monitor utilization of browse in winter range areas. Avoid livestock utilization levels that reduce the long-term viability of browse plants.

Operation and Maintenance Actions

Maintenance of existing and newly constructed facilities or projects will occur over time... Such activities could include, but are not limited to, routine maintenance of existing... water control structures..., reservoirs, wells, pipelines, waterholes, fences, cattle guards, seedings, ... and other similar facilities/projects (Page 100).

Consistency with Other Plans and Policies

The final decision must also take into account the following plans and policies, which also direct and provide a framework for management of BLM lands/resources within Lakeview Resource Area:

Standards for Rangeland Health and Guidelines for Livestock Management for Public Lands Administered by the BLM in the States of Oregon and Washington (BLM

1997a)

The allotment did not meet all applicable Standards for Rangeland Health and Guidelines for Livestock Management when the Rangeland Health Assessment was conducted in 2005 (BLM 2005). Riparian standard 2 was not met because of impacts to a riparian area around a hot springs. This area was excluded from grazing in 2006 and currently all 5 standards are being met.

Integrated Noxious Weed Control Program, EA#OR-010-2004-03 (BLM 2004)

This plan tiered to the noxious weed management direction in the *Lakeview RMP/ROD* and provided more specific details on the locations of known noxious weed sites in the Lakeview Resource Area and how periodic treatments would be conducted on these sites, as well as new sites discovered during future inventory. The treatment methods addressed in this plan included cultural, mechanical, biological, and chemical. The type of treatment used and the frequency of treatment would be based on site/plant characteristics, treatment priorities identified in the plan, and budget.

Greater Sage-Grouse Conservation Assessment and Strategy for Oregon (ODFW 2005)

States “where livestock grazing management results in a level of forage use (use level) that is consistent with Resource Management Plans, Allotment Management Plans, Terms and Conditions of Grazing Permits or Leases, other allotment specific direction, and regulations, no changes to use or management are required if habitat quality meets Rangeland Health Standard and Guidelines” (Page 75). The plan also provides guidelines on how to construct or maintain range improvement projects to minimize impacts to sage-grouse habitat (Page 76).

Greater Sage-Grouse Interim Management Policies and Procedures (BLM 2011)

Represents the current BLM Washington Office interim policy for sage-grouse habitat management until such time as plan amendments can be completed throughout the range of the species that address a comprehensive conservation strategy. This policy addresses proposed grazing permit renewals and proposed water developments as follows:

Permit Renewals

Plan and authorize livestock grazing and associated range improvement projects on BLM lands in a way that maintains and/or improves Greater Sage-Grouse and its habitat. Analyze through a reasonable range of alternatives any direct, indirect, and cumulative effects of grazing on Greater Sage-Grouse and its habitats through the NEPA process:

- Incorporate available site information collected using the *Sage-Grouse Habitat Assessment Framework* when evaluating existing resource condition and developing resource solutions,

- Incorporate management practices that will provide for adequate residual plant cover (e.g., residual grass height) and diversity in the understories of sagebrush plant communities as part of viable alternatives. When addressing residual cover and species diversity, refer to the ESD (ecological site data) and “*State and Transition Model*,” where they are available, to guide the analysis.
- Evaluate and implement grazing practices that promote the growth and persistence of native shrubs, grasses, and forbs. Grazing practices include kind and numbers of livestock, distribution, seasons of use, and livestock management practices needed to meet both livestock management and Greater Sage-Grouse habitat objectives.
- Evaluate the potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements. Address those structural range improvements identified as posing a risk during the renewal process.
- Balance grazing between riparian habitats and upland habitats to promote the production and availability of beneficial forbs to Greater Sage-Grouse in meadows, mesic habitats, and riparian pastures for Greater Sage-Grouse use during nesting and brood-rearing while maintaining upland conditions and functions. Consider changes to season-of-use in riparian/wetland areas before or after the summer growing season.

To ensure that the NEPA analysis for permit/lease renewal has a range of reasonable alternatives:

- Include at least one alternative that would implement a deferred or rest-rotation grazing system, if one is not already in place and the size of the allotment warrants it.
- Include a reasonable range of alternatives (e.g., no grazing or a significantly reduced grazing alternative, current grazing alternative, increased grazing alternative, etc.) to compare the impacts of livestock grazing on Greater Sage-Grouse habitat and land health from the proposed action.
- Install escape ramps and a mechanism such as a float or shut-off valve to control the flow of water in tanks and troughs.
- Design structures in a manner that minimizes potential for production of mosquitoes which may carry West Nile virus.

CHAPTER 2—ALTERNATIVES

Actions Common to Grazing Alternatives 1 and 2

Grazing Management System

The allotment is grazed only during the winter season for up to 10 weeks between January 1st and March 14. There are 4 small pastures, but the only reliable water is at the Hot Springs. For this reason, all the pastures may be grazed simultaneously or if there is water in the Fish Creek tank or Fisher Canyon, the cows can be rotated between pastures during the grazing season.

Monitoring

Monitoring would continue, generally as specified in the *Lakeview RMP/ROD* (BLM 2003b, pages 53-55, as maintained). In summary, trend monitoring studies would be conducted and include photo station and observed apparent trend methodologies are used to measure cover, species composition and frequency. Utilization studies would be conducted using the key forage plant method. Utilization is a measure of the amount of the current year’s forage that is consumed by livestock. Monitoring methodology would follow the latest protocol, such as

Technical References 1734-3 and 1734-4 (BLM 1996a, 1996b) incorporated herein by reference. Table 1 describes the key species and utilization targets identified for the Cox Individual Allotment.

Table 1. Key Species and Target Utilization Levels for Pastures within the Allotment

Pasture	BLM Acres	Trend Plot ¹	Key Species	Utilization Target %
Fall	376	CI-01	Inland Saltgrass (<i>Distichlis stricta</i>)	50
South	485		Crested Wheatgrass <i>Agropyron Cristatum</i>	50
Lower Fisher Canyon	235		Sandberg Blue grass <i>Poa Sandbergii</i>	50
Estelle Calderwood	150		Inland Saltgrass (<i>Distichlis stricta</i>)	50

Grazing Permit Terms and Conditions Applicable to All Grazing Alternatives

Terms and conditions that comply with Federal and State policies will be included within any grazing permit issued under any grazing alternative. This includes requirements such as: timely payment of fees, submission of actual use reports, providing administrative access across private land, continued compliance with Rangeland Health Standards, and maintenance of range improvements.

Grazing Management Flexibility

Knowing that uncertainties exist in managing for sustainable ecosystems, changes to the annual grazing use may be authorized within the limits of the grazing permit for reasons such as, but not limited to:

Adjust the rotation/timing of grazing based on previous year's monitoring and current year's climatic conditions. An example of this would be; to turn livestock out later in the season on a year with a wet cold spring; or to bring livestock off the allotment early as conditions warrant this need.

Dry years that limit water availability; An example would be resting a pasture that had low water and shifting livestock use to the pasture that had water. Conversely on wet years, livestock could be moved to areas near more dependable water sources.

Change in use periods to balance utilization levels in each pasture. An example of this would be to shorten the time period or number of livestock in a pasture that had 65% average utilization and or increase the time period and number of livestock in another pasture that had 30% average utilization if the target utilization in both pastures is 50%.

Flexibility in grazing management would be authorized within the active permitted AUMs and outside permit dates, some of the more common adjustments are:

Increasing livestock numbers while shortening the season of grazing use

Adjustments to the length of time and AUMs of grazing use to meet resource objectives including but not limited to utilization targets

Temporary (1 year) adjustments to pasture use usually dependent on water availability or climate related issues. Sometimes adjustments would be made to reduce conflicts with other resources; such as one time recreational or other activities where livestock or the other resource would benefit from adjusting the livestock use.

Alternatives Analyzed in Detail

Alternative 1 - No Action

The No Action Alternative would renew the existing livestock grazing permit (#3600243) in the Cox Individual Allotment for the current grazing permittee with the same terms and conditions. A 10-year term livestock grazing permit would be issued that continues current grazing management during the permitted season with the current specified grazing use and winter grazing system. This definition for the No Action Alternative is consistent with BLM (2000) guidance.

Table 2. Specified Grazing Use for Alternative 1

LIVESTOCK		GRAZING PERIOD		TYPE USE	AUMs
Number	Kind	Begin Date	End Date		
30	CATTLE	1/1	3/15	Active	74

Alternative 2 - Reduce AUMS by 50%

Under this alternative, livestock grazing permit (#3600243) in the Cox Individual Allotment would be renewed for the same grazing period as Alternative 1, but for only 50% of the AUMs. Therefore, the authorized AUMS would be 37 instead of 74.

Alternative 3 - No Grazing on Public Lands in the Allotment

Under this alternative, the current grazing permit would not be renewed and livestock grazing would not be authorized on public lands within the Cox Individual Allotment. The 74 AUMs of forage would be relinquished for a ten-year period. For analytical purposes the BLM assumes that grazing still could occur on up to 550 acres of private lands located within the allotment, if the land owner fenced out the public lands at his own expense. This alternative is being considered to provide a full range of alternatives and comply with current grazing management permit renewal guidance (BLM 2000, 2008b).

CHAPTER 3—DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section presents a description of the current environment within the allotment and a discussion of the potential changes resulting from implementation of the alternative management actions. An inter-disciplinary (ID) team has reviewed and identified the resources values and uses that could potentially be affected by the alternative actions. The resources identified as “not affected” or “not present” are listed in Table 3 and will not be discussed or further analyzed in this EA. The remainder of this chapter describes the potential direct, indirect, and cumulative effects on resources and resource uses that may result from each alternative on those resources or uses that are present within the allotments.

Climate and Greenhouse Gasses

Affected Environment:

Climate patterns of this region are typical of the Intermountain West precipitation zone, with winters and early springs cold and constituting the majority of the precipitation, while summers are typically warm and dry. Average precipitation for the Cox Individual Allotment, based upon the Parameter-elevation Regressions on Independent Slopes Model (PRISM) is estimated to average 7-12 inches/year, with extreme lows (<6 in) and highs (>13in) occasionally occurring. Average yearly temperatures range from 30-59° F, with average lows in December ~18° F, and average highs in July ~82° F; the coldest and warmest months, respectively (PRISM Climate Group, 2012).

Environmental Consequences:

Effects Common to Alternatives 1-3

Based on analyses contained in several recent permit renewal EAs (BLM 2012c, 2012d), the utilization of 0 to 74 AUMs of forage would have no scientifically verifiable effects on regional or global climate change, nor would it have any significant effects on either greenhouse gas emissions or carbon sequestration processes.

Soils and Biological Soil Crusts

Affected Environment:

Soil information was collected from the Soil Survey of Lake County, Southern Part, Natural Resource Conservation Service (NRCS 1991) as well as soil data on file at the Lakeview District BLM Office. This data is herein incorporated by reference in its entirety and is summarized in the following section.

There are 14 soil map units in the allotment (Map 3). There are 4 prominent soil types that occupy about 62% of the allotment. The most prominent soil types are the Felcher-Rock Outcrop complex (19% of the allotment), and the Rock Outcrop-Felcher Association (14% of the allotment). Both are found on 30-70% south slopes and the difference is the Felcher-Rock

Table 3 - Resources or Uses that are Not Present or Would Not be Affected

Elements of Human Environment		Rationale
Air Quality (Clean Air Act)	Not Affected	None of the alternatives would have measureable impacts to air quality or discharges of regulated air pollutants.
Environmental Justice (Executive Order 12898)	Not Present	None of the alternatives would have disproportionately high or adverse effects on minority or low-income populations as such populations do not exist within the allotment.
Prime or Unique Farmlands	Not Present	No such lands are located in the allotment.
Flood Plains (Executive Order 13112)	Not Affected	None of the alternatives propose construction within or other modification of flood plains. Therefore, there would be no floodplain or associated hydrologic impacts.
Paleontology	Not Present	There are no known paleontological resources within the allotment.
Threatened and Endangered Plants and Animals	Not Present	No federally listed plant or animal species or their habitat is found within the allotment. No special status plants are known to exist within the allotment.
Wild and Scenic Rivers	Not Present	There are no wild or scenic rivers within the allotment.
Water Quality (Clean Water Act)	Not Present	There are no perennial streams, water quality limited streams, or municipal drinking water sources in the allotment (BLM 2005).
Wilderness	Not Present	There are no WSAs or designated wilderness areas within the allotment (BLM 1989, 1991).
ACEC/RNAs	Not Present	There are no such special management areas within the allotment (BLM 2003b).
Lands	Not Affected	None of the alternatives analyzed would have any effects on current land status or land tenure.
Fisheries	Not Present	No perennial streams, water bodies, or associated aquatic or fisheries habitat exists within the allotment. The intermittent stream channels in the allotment do not provide fish habitat.
Forest and Woodlands	Not Present	No forest or woodland habitat exists within the allotment.
Significant Caves	Not Present	No caves exist within the allotment.
Minerals and Energy	Not Affected	None of the alternatives analyzed would have any effects on mineral or energy resources or uses.
Hazardous or Solid Waste	Not Present	No such sites or issues are known within the allotment.
Lands with Wilderness Characteristics	Not Present	BLM's original wilderness inventory did not find wilderness characteristics to be present within this allotment (USDI-BLM 1979f, 1979g, 1979h, 1980a, and 1980b). Since 2007, the BLM has been conducting wilderness inventory updates following current inventory guidance (BLM 2007c, 2008c, 2012a). In this process, an inter-disciplinary team reviewed the existing wilderness inventory information contained in the BLM's wilderness inventory files, previously published inventory findings, and citizen-provided wilderness information (such as ONDA 2005). BLM conducted field inventory, completed route analysis forms, made unit boundary determinations, and subsequently evaluated wilderness character within each inventory unit. BLM has completed wilderness character inventory updates for all lands within the allotment. Published inventory updates are available on BLM's website at http://www.blm.gov/or/districts/lakeview/plans/inventas.php . While ONDA found wilderness characteristics to be present in part of this allotment (ONDA 2005; p. 87-120), BLM did not find wilderness characteristics to be present (BLM 2012b). BLM hereby incorporates these findings by reference in their entirety. Based upon the results of BLM's inventory update, there are no lands with wilderness characteristics in the allotment. Therefore, there would be no impacts to such values.
Wild Horses (Wild Horse and Burro Act)	Not Present	The allotment is located outside of designated wild horse herd management areas.

Outcrop is 60% Felcher soil and 25 % Rock Outcrop, while the Rock Outcrop-Felcher is 50% Rock Outcrop and 35% Felcher soil. The Felcher soil series is a brown, very cobbly clay loam and moderately deep (20-40 inches) to bedrock. It is well drained, with moderately slow permeability and about 4 inches of water holding capacity. The erosion hazard by water is severe or very severe.

The Orovada-mesman complex 0-5% slopes, occupies about 15% of the allotment and is found on lake terraces. The Orovada soil makes up 50% of the complex and is a very dark grayish brown silt loam. It is deep 40-60 inches to the hardpan, well drained and has moderate permeability. The available water holding capacity is about 8 inches and the erosion hazard by water is slight and moderate by wind. The Mesman soil occupies 35% of the complex and is also found on lake terraces. It is a dark brown sandy loam that is very deep (more than 60 inches) to bedrock and well drained. The permeability is slow and the water holding capacity is about 2 inches. The hazard of erosion by water is slight and by wind is moderate.

The McConnel very gravelly sandy loam, 2-15 percent slopes (15% of the allotment) occupies the fans and lake terraces. The typical profile for this soil is very gravelly sandy loam on the surface (0-10 inches) down to extremely gravelly loamy course sand (22-60 inches). This soil is very deep (more than 60 inches) to bedrock and shallow to moderately deep (10-25 inches) to sand and gravel. It is somewhat excessively drained and permeability is moderately rapid to very rapid. The hazard of erosion is slight for water and wind.

The Reese very fine sandy loam, 0-1 percent slopes (10% of the allotment) occupies the alluvial flats. The typical profile for this soil is dark brown very sandy loam for 0-4 inches and then varies from clay loam to sandy loam down to 60 inches. This soil is very deep (more than 60 inches) to bedrock and poorly drained with slow permeability and an available water holding capacity of about 1 inch. The hazard of erosion by water is none and by wind is moderate. The depth to seasonal high water table is 12-36 inches during March – July and more than 36 inches during the rest of the year.

The Alvodest-Playas complex, 0-1 percent slope, (10% of the allotment) occupies alluvial flats in lake basins and is 55% alvodest soil and 30% playas. The typical profile for this soil is very dark grayish brown silt loam (0-2 inches) down to dark brown loam at 60 inches. It is very deep (more than 60 inches), moderately well drained, with slow permeability and an available water holding capacity of about 2 inches. The hazard of erosion by water is none and by wind is moderate. The depth to seasonal high water table is 6 inches above the surface to 36 inches below the surface during December –April and more than 36 inches during the rest of the year.

The Deseed-Freznik complex, 2-15% slopes (7% of the allotment) occupies tablelands. The typical profile for Deseed soils which makes up 50% of the complex, is a dark grayish brown silt loam (0-3 inches) and then clay loam to cobbly loam by 28 inches depth. This soil is moderately deep (20-40 inches) to bedrock and shallow 7-12 inches to claypan. This soil is well drained, with slow permeability and an available water capacity of about 5 inches. The Freznik soil makes 35% of the complex and is a dark brown very stoney sandy loam for the top 7 inches. The Freznik soil below 7 inches becomes a clay loam down to fractured basalt at 32 inches. This soil is moderately deep (20-40 inches) to bedrock but very shallow (5-7 inches) to claypan. It is

well drained with moderate permeability in the upper 7 inches and then very slow permeability. The available water capacity is about 2 inches and the hazard of water erosion is moderate.

The remaining 7 soil types make up only 11% of the allotment. Most of them are very cobbly loam soils and occupy 8% of the total allotment. There are small areas (about 3% of the allotment) of silt loam soils and playas.

The Rangeland Health Assessment found that soils in the allotment exhibit infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil is appropriate, and therefore, Standard 1 is being met (BLM 2005). This assessment examined soil surface factor (SSF) data for the allotment collected during the ecological site inventory (ESI) effort in 1987. SSF ratings are used to assign an erosion class rating and the potential susceptibility of soil to accelerated erosion. Forty-one percent of the allotment was rated in the slight erosion condition class with 9 percent in rockland and 50 percent unknown (Table 4).

Table 4. Soil Surface Factor in the Cox Individual Allotment

	Erosion Condition Classes*			Rockland or Playa	Unknown**
	Slight	Moderate	Critical		
Acres	672	0	0	154	810
Percent of Allotment	41%	0	0	9%	50%

* The erosion condition classes are based on numeric scoring system which considers soil movement, surface litter, surface rock, pedestalling, flow patterns, rills and gullies.

** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities. The transect data for the SWA may not apply to these inclusion, therefore the acres in these inclusions are considered unknown.

Observed apparent trend (OAT) data (Table 5) was used to determine trend indicators correlated to soil stability. These indicators are: surface litter, pedestals, and gullies. OAT data collected indicates stable soils on the Cox Individual Allotment; i.e. the majority of litter is collecting in place, there is little evidence of pedestaling, and gullies are absent from the slopes.

Table 5. Observed Apparent Trend Cox Individual Allotment

	Observed Apparent Trend*			Rockland or Playa	Unknown**
	Upward	Static	Downward		
Acres	0	672	0	154	810
Percent of Allotment	0	41%	0	9%	50%

* The Observed Apparent Trend (OAT) is a numerical rating which considers vigor, seedlings, surface litter, pedestals and gullies to estimate the trend of a particular site and SWA..

** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities. The transect data for the SWA may not apply to these inclusion, therefore the acres in these inclusions are considered unknown.

Biological soil crusts (BSCs) such as mosses, lichens, micro fungi, cyanobacteria and algae play a role in a functioning ecosystem. In addition to providing biological diversity, BSCs contribute to soil stability through increased resistance to erosion and nutrient cycling (Belnap *et al.* 2001). Lichen species diversity is poorly known in the Pacific Northwest (Root *et al.* 2011). Further, identification of BSCs at the species level is not practical for fieldwork, as it is very difficult and may require laboratory culturing (Belnap *et al.* 2001).

BSC cover data was not collected during the South Lake Ecological Site Inventory (ESI) process. In the Cox Individual Allotment the photos of the vegetation trend site do not indicate any BSCs ever present in this Reese soil series dominated by inland saltgrass. Though data is lacking, BLM staff note (based on professional field knowledge) that BSCs are present in parts of the allotment, but occupy a very small percentage of the total ground cover. The condition of existing BSCs would be similar to the condition of the soils, litter, and vegetation with which they co-exist.

Environmental Consequences:

Effects Common to Alternatives 1 and 2

Studies by Ponzetti and McCune (2001) examined biotic soil crust cover and composition at several locations in central and eastern Oregon in 1995. The study compared species richness of microbiotic crusts inside and outside of several exclosures to provide a grazed versus ungrazed comparison. Results of the study found that all of the sites had between one and six more taxa inside the exclosures than in the grazed pastures, with one exception, which had three more species in the grazed transect. Generally, total crust cover was inversely related to vascular plant cover, as there was a positive relationship of crust cover to available soil surfaces. Ponzetti and McCune (2001) found that the differences in total crust cover and species composition between study sites were most strongly related to soil pH, electrical conductivity, and the relative calcium carbonate content of the soil. Soil chemistry and climate differences were a stronger factor affecting cover and species composition than livestock exclusion. However, the study found a lower cover of biotic crusts, lichens, and species richness in grazed areas. Generally, livestock do not graze on BSCs. The primary impact to BSCs from livestock is associated with hoof trampling. In this respect the impacts to BSCs and soils are generally inter-related. Therefore, BLM assumes that, for purposes of this analysis, the impacts to BSCs can generally be quantified by quantifying the associated impacts to soils.

The impacts of livestock grazing on soils within the Lakeview Resource Area were also analyzed in the *Lakeview Proposed RMP/Final EIS* (BLM 2003a) and that analysis is incorporated herein by reference. In summary, livestock use would continue to negatively impact soils due to compaction around existing waterholes and along cattle trailing areas (pages 4-35 to 4-36). The use pattern maps (located in allotment file) and the low livestock density (22 acres/AUM) in this allotment indicate that most cattle tend to concentrate within a 0.1 mile around existing water sources (a tenth of a mile buffer represents approximately 25 acres).

The water trough at the hot springs is the only consistently reliable constructed water source in the allotment. There are also 2 small developments associated with the natural intermittent

drainage in Fisher Canyon (Fisher Canyon Waterhole) and along Fish Creek (Ox Reservoir). These 2 developments currently are in need of maintenance and only hold water in wetter years. There is a third unnamed waterhole located in the southwest corner of the Estelle Calderwood Pasture that is fed by a constructed drainage ditch located down gradient and to the west of the hot springs. This waterhole does not retain water most years (Map 2).

Based on these assumptions, an estimated 25 acres total around the hot springs trough would be impacted by concentrated grazing use under both Alternatives 1 and 2 during most years. Another 25 acres of concentrated disturbance could be expected around the unnamed waterhole during wet years. The concentrated use on the intermittent drainages and the 2 associated water developments is assumed to be concentrated within a 100 foot wide area along about 0.5 miles of Fish Creek and 0.25 miles of Fisher Canyon. Based on these assumptions, about 9 acres would be impacted by concentrated livestock use during wet years.

Livestock also tend to trail along fence lines and between water sources. There are approximately 5 miles of existing fence where trailing would likely occur. Assuming a 5-foot wide swath would occur along fences, about 3 acres would be impacted by concentrated livestock trailing use. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing between water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

The total area estimated to be impacted by concentrated livestock use would be about 62 acres or about 3.5% of the allotment during wet years and even less during dry years. However, the limited grazing period (2-10 weeks in winter) would allow time for natural processes such as frost heave, plant growth, and biological activity in the soil to mitigate the impacts of trampling and vegetation removal to some degree.

These alternatives would continue to result in slight to moderate forage utilization and trampling across 96.5% of the allotment while continuing to provide for some BSC retention and litter accumulation, resulting in the maintenance of existing organic matter, soil structure, and productivity across the majority of the allotment. Alternative 2 would have up to 50% less impact across these same areas due to reduced cattle numbers.

About 50% of the allotment consists of soil types (Reese, Alvodest, McConnel, Orvada-Mesman) that are suited for winter grazing (NRSC Soil Survey, Southern Lake County, 1999). These soils occupy the lower areas of the allotment where most of the use occurs. While wind and water erosion would still have an on-going negative impact on soils and BSCs, the allotment would be expected to continue to meet rangeland health standard 1 into the foreseeable future under both alternatives.

Effects of Alternative 3

Under the No Grazing Alternative, little change to soils or BSCs would occur on the allotment in the short-term (up to 5 years). Most of the concentrated livestock use areas on public land associated with water sources and the cattle trails (about 37acres) would reclaim naturally with vegetation and BSCs over the long-term (5-10 years). Most of the concentrated livestock use

area associated with the hot springs water source (25 acres) would likely continue to be impacted the same as Alternatives 1 and 2, as this water source is located on private land and could continue to be grazed.

About 9 acres along Fish Creek and Fisher Canyon, 25 acres near the unnamed waterhole, and about 1.5 acres along existing fences would begin to reclaim naturally with vegetation from surrounding areas in the short-term. However, due to the limited amount of existing BSCs present in the area to serve as a seed source, total BSC cover is not expected to increase substantially over the 10-year permit life. Further, some ground disturbance may persist due to continued use by wildlife such as antelope and deer.

Vegetation

Wetland and Riparian Areas

Affected Environment:

The Rangeland Health Assessment noted there are about 50 acres of palustrine wetlands, but no perennial streams within the allotment. The Rangeland Health Assessment found that most of these wetland areas were rated at Proper Functioning Condition (PFC) and were meeting Rangeland Health Standard 2 (related to riparian/wetland function). However, the spring head for the hot springs (located on private land) was found to be non-functional based on vegetation condition. At that time grazing at the spring head was uncontrolled and had resulted in a decline of riparian vegetation (BLM 2005). In 2006, an enclosure fence was constructed to protect the spring head from grazing. In November 2007 another assessment was done and concluded the vegetation at the spring head had improved substantially and livestock grazing was no longer a factor limiting Riparian/Wetland function (BLM 2007d). As a result, all wetland and riparian areas are currently meeting rangeland health standard 2.

Environmental Consequences:

Effects of Alternative 1

Since the existing palustrine wetlands in the allotment are in PFC and livestock grazing is no longer limiting riparian/wetland function (BLM 2007d, 2013), continuing current grazing management would be expected to maintain this condition over the 10-year permit lifetime.

Effects of Alternative 2

Under this alternative, the impacts to wetland and riparian habitat would be similar to Alternative 1. The existing wetland condition (PFC) would be maintained or improved slightly due to the reduced utilization levels.

Effects of Alternative 3

Under this alternative, the wetland and riparian habitat would be expected to maintain or improve in existing condition (PFC) due to the removal of livestock grazing.

Upland Vegetation

Affected Environment:

The South Lake Ecological Site Inventory (ESI) inventory s described several indicators of plant community health. These include observed apparent trend (OAT), Soil Surface Factor (SSF), and seral stage. Soil Surface Factor (SSF) is an indicator of accelerated erosion and is a method of documenting observations regarding erosion. With 41% (Table 4) of the allotment being in the slight and no acres in the moderate or higher classes there is little or no active soil erosion or evidence of past erosion on these areas. The Observed Apparent Trend (OAT) for the vegetation communities on public land was determined during the ESI (1987) and is seen in the Table 5. The static trend for the acres in which OAT was determined .indicates that the desirable plants have moderate vigor and some seedlings of desirable plants are present.

The ESI also collected data on existing vegetation. A summary of this data is included in Table 6 and shown on Map 4. The ESI also compared the current plant composition to a defined Potential Natural Plant Community for the identified soil type and precipitation zone. Using the 1987 ESI data, the percent of the allotment in each seral stage is summarized in Table 7.

About 3% of the allotment (ARTR2-SIHY) is in the early seral stage and is in found in the Fisher Canyon pasture which is slightly to light grazed under the current winter grazing system. About 37% of the allotment is in the mid seral stage that included significant crested wheatgrass strands (16% of allotment), big sagebrush/cheatgrass (8% of the allotment) and big sagebrush/bluebunch wheatgrass communities (11% of the allotment). The big sagebrush/cheatgrass community found in the Fall Pasture also contained significant amounts of needlegrass, great basin wildrye and Sandberg bluegrass in the sagebrush understory (Table 6). A portion (33%) of the allotment located on the west side and adjacent to and including private lands was not surveyed. About 15% of the allotment contains unknown inclusions of other vegetation types.

There is one long-term trend photo plot starting in the early seventies that has been taken 7 times through the years and as recently as 2010. The photo plot is in the sodic meadow area of the Fall pasture and shows a very stable meadow community, with some increase in saltgrass cover since the 1980s.

Environmental Consequences:

Effects Common to Alternatives 1-2

The impacts of continuing grazing under a winter a grazing system on the upland plant communities within the Lakeview Resource Area have previously been analyzed in the *Draft Lakeview RMP/EIS* and *Lakeview Proposed RMP/Final EIS* (BLM 2001, 2003a) and these

Table 6. Vegetation Types in Cox Individual Allotment

Vegetation Type	Acres	Percent of Allotment
Grass		
AGCR <i>Agropyron cristatum</i> crested wheatgrass	256	16%
Low sagebrush/Grass		
ARAR-POSE <i>Artemisia arbuscula</i> – <i>Poa sandbergii</i> big sagebrush/ Sandberg’s bluegrass	44	3%
Big Sagebrush/Grass		
ARTR2-BRTE <i>Artemisia tridentata</i> – <i>Bromus tectorum</i> big sagebrush/cheatgrass	140	8%
ARTR2-AGSP <i>Artemisia tridentata</i> – <i>Agropyron-spicatum</i> big sagebrush/bluebunch wheatgrass	172	11%
ARTR2-SIHY <i>Artemisia tridentate</i> – <i>Sitanion hystrix</i> big sagebrush/bottlebrush squirreltail	49	3%
ARTR2-STTH <i>Artemisia tridentate</i> – <i>Stipa thurbiana</i> big sagebrush/Thurber’s needlgrass	12	1%
Big Sagebrush/Grass TOTAL	373	23%
Playa	16	1%
Rockland/ Rubble	154	9%
Unknown*	793	48%
TOTAL	1,636	

* Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities. The transect data for the SWA may not apply to these inclusion, therefore the acres in these inclusions are considered unknown. The unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment

Table 7. Ecological Conditions in Cox Individual Allotment

	Ecological Condition Classes					
	Early	Mid	Late	Climax	Rockland or Playa	Unknown*
Acres	49	605	49	0	154	779
Percent of Vegetation	3	37%	3%	0	9%	48%

* Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities. The transect data for the SWA does not generally capture vegetation composition of these small unmapped inclusions, therefore the vegetation in these inclusions are considered unknown.

analyses are incorporated herein by reference. In summary, the vegetation composition of key perennial herbaceous species is expected to improve or be maintained over time under this type of grazing system (BLM 2003a; pages 4-5 and 4-9). In addition, a winter system would maintain or improve the composition of the key perennial herbaceous species within the modified grassland (crested wheatgrass) communities, the big sagebrush shrub grassland, low sagebrush shrub grassland, and the wetlands found in this allotment (BLM 2001; page A-162-168). The perennial grasses, crested wheatgrass, inland saltgrass, Thurber’s needlegrass, blue bunch

wheatgrass, and Sandberg's bluegrass are dormant during the winter grazing season and grow in the spring and summer after the cattle have left the allotment. In contrast to the effects of grazing during the growing season, these grass plants are able to maximize leaf growth, seed production, and root growth later during the growing season and mitigate the limited impacts of grazing during the winter.

Effects of Alternative 1

The upland vegetation communities would continue to be negatively impacted, primarily in livestock concentration areas near water sources and cattle trails under this alternative. The use pattern maps (located in allotment file) and low livestock density (22 acres/AUM) in this allotment indicate that cattle use tends to concentrate within 0.1 mile around existing water sources (see impact discussion in Soils and Biological Soil Crust section). An estimated 62 acres (3.5% of the allotment) of concentrated vegetation use or trampling would continue around the hot springs water source, 1 unnamed waterhole (in wet years) 2 intermittent creeks and associated water developments (in wet years), and along fences. However, winter grazing use occurs when the vegetation is dormant and this allows adequate time for natural processes such as frost heave and plant growth to mitigate the impacts of trampling and vegetation removal.

The average utilization measured across the entire allotment during the last four years ranged from 34% in 2010 to 56% in 2013. The average actual use in the last 8 years since winter grazing began was 60 AUMs. This alternative would continue to result in slight to moderate forage utilization (vegetation removal) across 98% of the allotment while continuing to provide for soil health and vegetation productivity across the majority of the allotment. This would result in maintaining the existing upland plant community and species composition.

Under the current grazing management, the allotment is meeting Rangeland Health Standard 3 (BLM 2005). Grazing is adjusted through the flexibility provided in the annual application process, to control livestock distribution, grazing utilization levels, and provide rest from grazing. The winter grazing management would continue to include a pasture rotation grazing system when water is available in either the Fisher Canyon or Fish Lake pasture. This winter grazing would likely sustain the current plant cover and species diversity. Grazing at light to moderate intensities would result in a diversity of residual grass cover heights across the allotment.

The ecological condition of the allotment was determined by the ESI to be 3% in the early seral stage, 3% in late seral and 37% in mid seral stage (Table 7). About 9% is rockland and 48% was not surveyed. The observed apparent trend (OAT) data (Table 6) was also collected during the ESI inventory in 1987 to measure indicators of the trend in the vegetation communities. These indicators include vigor and seedling production along with surface litter, pedestals, and gullies. The OAT data collected indicated a static trend in 41% of the allotment, while 9% of the allotment is rockland and 50% was rated as unknown.

The one long-term photo trend plot in the allotment is located in the fall pasture and the sodic meadow vegetation type, for which there is no ESI data. However, the photos indicate that the vegetation community here is very stable or improving between 1975 and 2010. This is also the

vegetation type and area of the allotment where much of the grazing use under the current winter grazing system is occurring. The portion of the allotment where the OAT was measured has received slight or light grazing use in the last 10 years. The portion of the allotment (3%) that was rated in the early seral stage (Fisher Canyon) has also received slight grazing use in the last 10 years. Therefore, in most of the allotment there is good plant vigor, good seedlings establishment, the majority of litter is collecting in place, there is little evidence of pedestaling, and gullies are absent from the slopes. The vegetation communities across the allotment appear stable or improving under current grazing management and this trend would continue into the foreseeable future.

Effects of Alternative 2

Under Alternative 2, the 50% reduced grazing level (36 AUMs) would result in some change in the impacts to vegetation compared to Alternative 1 due to the reduction in livestock density around water sources and fences. The areas impacted by concentrated livestock use would likely be reduced by half to about 31 acres or 1.7% of the allotment.

Across the allotment, the average utilization levels would be lower as the amount of forage consumed by livestock would be approximately half as much as under Alternative 1. The utilization over the last four years ranged from 37-56% with most of that in use occurring in the Fall and South Pastures. Therefore, the utilization levels would be estimated at approximately one half or about 18-25% under Alternative 2. The reduced utilization levels would result in a minor increase in ground cover of grass species close to water sources, but the composition and production of species would remain about the same.

Effects of Alternative 3

Plant communities shifts occur very slowly in the high desert climate without the influence of a major disturbance such as fire, weed invasion or catastrophic event (Holechek *et al.* 2006). Under the No Grazing Alternative, there would be little or no noticeable difference in plant communities in the short-term 5 years and only slight shifts in vegetation may occur over the long-term (10-years). Most of the concentrated livestock use areas (37 acres) associated with the hot springs water source would continue to be impacted the same as alternatives 1 and 2, as this area is on private land and could continue to be grazed. The 9 acres along Fish Creek and Fisher Canyon and about 1.5 acres along the fences would begin to reclaim naturally with vegetation from surrounding areas over short term (5 years) and contain more natural vegetation over the long term (10 years).

The majority of the allotment (96.5%) receives slight to moderate use so any changes in vegetation would be slow and insignificant and probably would not even be measurable over the 10-year life of the permit. Little or no change in vegetation would be expected in the 16% of the allotment that is crested wheatgrass seeding or in the areas with cheatgrass dominating the understory of big sagebrush (8% of the allotment) or rockland (9% of the allotment) or the 24% that is private land. Therefore, only in the 43% of the allotment would long-term shifts in vegetation be possible. These long-term changes may show a 5-10% shift of species toward an increase in those that had been favored by cattle and a decrease in those less utilized by cattle. The shrub component (low sagebrush and big sagebrush) would likely to remain relatively stable.

Noxious Weeds

Affected Environment

Currently there are several invasive species infestations present within the allotment including Bull thistle (*Cirsium vulgare*), spiny cocklebur (*Xanthium spinosum*) and perennial pepperweed (*Lepidium latifolium*). Most of the infestation resides within the Estelle Calderwood pasture. Bull thistle, spiny cocklebur and perennial pepperweed have the ability to spread through several vectors including wind, water, motorized vehicles, and livestock/wildlife movement. However, based on an examination of existing weed site data, water and motorized vehicles appear to be the most important vectors of weed transport within the Lakeview Resource Area (BLM 2004).

Environmental Consequences:

Effects Common to All Alternatives

The scattered patches of perennial pepperweed, and small infestations of bull thistle and spiny cocklebur are currently being managed under the BLM's *Integrated Noxious Weed Management Program* (BLM 2004) and other weed management guidance. The risk of weed invasion or spread would be greatest in the high livestock concentration areas. This weed management program utilizes cultural, physical, biological, and chemical methods to control the noxious weeds, along with monitoring the infestations annually. The BLM would also continue to follow a Weed Prevention Schedule to prevent new noxious weeds from spreading into the allotment.

Effects of Alternative 1

Under the current grazing management with the permitted season of use (January 1 through March 15) the populations of the current invasive species would still be in a dormant state where seed spread and disturbance would not be an issue. The reproductive phenology of these invasive species is such that the majority of individuals would have flowered, set seed, and dispersed seed before the season of livestock use begins. While livestock do have an ability to spread invasive species seed, these plant will not be actively flowering or producing seed at this time of year. The risk of dispersing or spreading seed would be lower during the permitted season than other times of the year. The risk of weed invasion or spread would be greatest in the high livestock concentration areas (about 3.5% of the allotment).

Effects of Alternative 2

Under this alternative, the impact of grazing on the potential to spread invasive species would be similar or less than Alternative 1. Since the current invasive species are spring or summer germinating species, the reduction of 50% in active use would not impact the current infestations.

Effects of Alternative 3

Under this alternative grazing would be removed from public lands within the allotment. The potential to spread weed seed would be less than either Alternative 1 or 2. The existing infestations could slightly decrease with no livestock disturbance and increased vigor of surrounding native plant communities. However, if the private land owner should choose to fence off and graze his private lands, the potential risk of weed spread on those private lands would be similar to Alternative 1.

Wildlife

Affected Environment:

The Rangeland Health Assessments for Cox Individual Allotment were meeting the Rangeland Health Standards 3 and 5 related to wildlife habitat (BLM 2005 (amended 2012)).

Water available to wildlife within the allotment is limited to few natural sources and water developments for cattle (waterholes, reservoirs, seeps and springs).

The allotment falls within the larger Oregon Department of Fish and Wildlife (ODFW) Beatys Butte big game habitat management unit. The bighorn sheep, mule deer and pronghorn populations are relatively stable within this unit. Habitat quantity and quality do not appear to be limiting big game population size or health within the unit. Deer and pronghorn populations continue to fluctuate at or slightly above ODFW's population management objectives for the unit (ODFW 2003). The allotment comprises a small percentage of the unit and provides habitat capable of supporting bighorn sheep, mule deer and pronghorn. Of this Herd Unit, the area within the allotments provide spring-fall habitat for mule deer, including fawning habitat. There are currently 39 AUM's allocated for bighorn sheep, mule deer, pronghorn, and other wildlife species within the Cox Individual Allotment (BLM 2003b, page A-37).

Other mammals observed in the allotment are jackrabbit, cottontail, coyote, ground squirrel, chipmunk, marmot, bobcat, mountain lion, badger, bat, and other common shrub-steppe mammal species. In some areas porcupines and bears have been seen. Some migratory birds use all habitat types in the allotment for nesting, foraging, and resting as they pass through on their yearly migrations. There has been no formal monitoring of migratory birds on this allotment. Common species observed or expected to occur based on species range and vegetation in the allotment are included in Table 8 (birds identified under the Migratory Bird Treaty Act of 1918, as amended).

Birds of Conservation Concern for the Great Basin Region that may inhabit the allotment are also included in Table 8. A mix of big and low sagebrush communities comprise the dominant vegetation across the allotment. Waterfowl may frequent the allotment during migration and a few pairs may breed on the private reservoirs in the area. The 1988 amendment to the Fish and Wildlife Conservation Act mandates the U.S. Fish and Wildlife Service (USFWS) to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the

Table 8. Wildlife Species with Special Management Considerations

Species and Designation	General Habitat	Species Status	Birds of Conservation Concern	Migratory Birds	Focal Species	Game Birds Below Desired Condition	Eagle Act
Prairie Falcon	Cliff-open habitat				x		
Ferruginous Hawk	Sagebrush-shrub steppe		x	x	x		
Golden Eagle	Elevated nest sites in open country		x	x			x
Sage Sparrow	Sagebrush		x	x	x		
Greater Sage Grouse	Sagebrush dominated rangelands	*FC	x		x		
Peregrine Falcon	Cliff-open habitat	**SSS	x	x			
Loggerhead Shrike	Open country/scattered trees/shrubs		x	x	x		
Swainson's Hawk	Open Habitat			x			
Sage Thrasher	Sagebrush-shrub steppe		x		x		
Bald Eagle	Wetlands/River Systems/Lakes	**SSS	x				x
Burrowing Owl	Grasslands-shrub steppe			x	x		
Brewer's Sparrow	Sagebrush clearings in bitterbrush		x	x	x		
Kit Fox	Arid shrub-steppe	**SSS					
Pallid Bat	Arid regions/rocky outcroppings	**SSS					
Townsend's Big-eared Bat	Lava fields /Rocky Cliffs /Abandoned Structures	**SSS					
Northern Harrier	Wetlands/Ponds/Riparian Areas			x			

*FC – Federal Candidate Species

**SSS – Special Status Species

Endangered Species Act (ESA) of 1973.” *Birds of Conservation Concern 2008* (BCC 2008) is the most recent effort to carry out this mandate.

Partners in Flight use the focal species approach to set biological objectives and link priority species with specific conservation recommendations. It is a multi-species approach in which the ecological requirements of a suite of focal species are used to define an 'ideal landscape' to maintain the range of habitat conditions and ecological processes required by land birds and

many other species. Focal species are considered most sensitive to or limited by certain ecological processes (*e.g.* fire or nest predation) or habitat attributes (*e.g.* patch size or snags). The requirements of a *suite* of focal species are then used to help guide management activities.

Migratory game bird species identified by the USFWS that represents species whose population is below long-term averages or management goals, or for which there is evidence of declining population trends, and may be present in the allotment, are also included in the following table. Golden and bald eagles are two species given special protection under the Bald Eagle Protection Act of 1940 (as amended). The allotment also provides habitat for some raptors (BLM 2005).

There are also numerous amphibian and reptile species that occur within the allotment including fence lizards, sagebrush lizards, gopher snakes, rattlesnakes, horned-lizards, and many other common shrub-steppe species.

Special Status Wildlife Species

Affected Environment:

The Bureau policy and guidance on special status species is to conserve those species and the ecosystems upon which they depend (BLM 2001). Other than the Greater Sage-grouse (Federal Candidate Species), there are no known wildlife species classified as federally-listed Threatened or Endangered, proposed or candidate species, or proposed or designated critical habitat within the area.

The allotment provides habitat for the Greater sage-grouse. The *Lakeview Proposed RMP/Final EIS* (BLM 2003a) Map W-1 shows areas defined as sage-grouse habitat as of spring 2002. The data displayed in the map is considered to be a “broad-brush” habitat map subject to refinement or update with new information over time. As noted in the footnotes of Map W-1, the habitat data represented “*the best data currently available*” and this data was expected to be refined or updated over time. Since the map was published, a cooperative habitat mapping effort with ODFW has occurred throughout eastern Oregon resulting in updated sage-grouse habitat and lek location data.

Knick and Connelly (2011) contain a compilation of recent sage-grouse research which addresses a variety of issues related to management of the species at the range-wide scale (often referred to as the “Monograph”). Information from the Monograph was synthesized for application at the regional scale (Oregon) within the *Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitats* (ODFW 2011).

Based on Oregon Department of Fish and Wildlife’s (ODFW) most recent sage-grouse lek data, there are no known active sage grouse leks found within the allotment, however, sage grouse have been seen historically using portions of the allotment at different times of the year. The nearest active lek is located approximately 2.5 miles southeast of the allotment boundary.

ODFW (2011) developed a habitat dataset that identifies the most productive landscapes for sage-grouse as either “core habitat” or “low density habitat”. Since that time, the BLM, in coordination with ODFW, have refined this dataset. At this point in time, core habitat has become synonymous with what BLM is currently calling “preliminary priority habitat” (PPH). This habitat is defined as areas that have the highest conservation value for maintaining sustainable Greater Sage-Grouse populations. These areas include breeding, late brood-rearing, and winter concentration areas. BLM is currently calling low density habitat as “preliminary general habitat” (PGH). This is defined as areas of occupied seasonal or year-round habitat outside of priority habitat. This mapping exercise considered a landscape approach to wildlife conservation prioritizing sage-grouse habitats and was based upon sage-grouse distribution and abundance in association to nearest lek and not on actual vegetation. The main objective of the exercise was to protect the most important breeding or nesting areas.

When analyzing BLM and ODFW’s refined PPH and PGH layers for the allotment, approximately 1160 acres (75%) of the Cox Individual Allotment rate as PPH. The Cox Individual Allotment does not contain PGH.

Sage-grouse habitat quality was reassessed for this permit renewal Environmental Assessment using the *Sage-grouse Habitat Assessment Framework* (Stiver *et. al.* 2010). At the Third Order scale (sage-grouse home range scale) habitats are limited within the allotment. Connelly *et al.* (2004) found most sage-grouse nest within 4 miles of a lek. Based on the distance from the nearest active lek and the sagebrush cover heights associated with the current dominant vegetation types, approximately 711 acres (40%) of the allotment rates as summer marginal habitat.

The remaining 1,055 acres (60%) of the allotment rate as unsuitable sage-grouse habitat. This is due to the lack of sagebrush cover and native perennial grasses. Based on the cover heights associated with the current dominant sagebrush vegetation types, Cox Individual Allotment does not contain suitable nesting or brood-rearing habitat.

The allotment lies within the range of the kit fox (bureau sensitive species). While potential habitat does exist, no kit fox have ever been documented within the Lakeview Resource Area. Therefore, this species is not carried forward for further analysis.

The Rangeland Health Assessment (BLM 2005) for Cox Individual Allotment did not identify any pygmy rabbit (bureau sensitive species) habitat. Therefore, this species is not carried forward for further analysis.

Peregrine falcons (BLM sensitive Species) have been observed in the general area due to releases from the Crump Lake hack site; however, no nesting has been documented within the allotment. Currently, there are no known nests or nesting habitat for bald eagles within the allotment. There are confirmed golden eagle nests found within the allotment.

Bat species are known to frequent the allotment including Townsend’s big-eared bats and pallid bats which are Bureau Sensitive Species. Spotted bats and fringed myotis (also Bureau Sensitive Species) rarely occur in the area and are not known to occur in the allotment.

Intensive range use can lead to altered invertebrate densities and species abundance and could reduce availability of habitat for certain bat species but causality is speculative and research would be required to draw conclusions (BCME 2008). Schmidt (2003) presented the following discussion regarding livestock grazing and bats:

“No studies were found which addressed the impact of livestock grazing on Townsend’s big-eared bat populations. One could predict, however, that this activity would negatively impact this species only if livestock grazing and associated activities were allowed to degrade water sources, or convert mesic riparian habitats to more xeric upland habitats. Livestock grazing may indirectly benefit bat species through the construction of additional water sources (Chung-MacCoubrey 1996)”.

Roosting and wintering (hibernacula) habitat for these species is limited throughout the allotment. There is 1 known cave on the BLM portion of the allotment capable of providing hibernacula for bats. The cave is located in cliff like habitat and should not be affected; none of the alternatives would likely have any measurable impacts to bats. Habitat is unknown on adjacent private lands. Therefore, they are not carried forward for further analysis.

The western bumblebee and is suspected to occur on the Lakeview Resource Area and may occur on the allotment, but no records documenting their occurrence exist. Therefore, this species will not be carried forward for further analysis.

Environmental Consequences: (Wildlife and Special Status Wildlife Species)

Effects Common to All Alternatives

ODFW (2011; page 13) cites two unpublished studies that documented sage-grouse mortality associated with fencing as a risk factor in winter habitat in Wyoming and near lek sites in Idaho. IM No. 2012-043 recommends marking fences within 1.25 mile of leks with anti-strike markers (reflectors). Based on the closest active leks being over 1.25 mile away from existing or proposed fences associated with the allotment, the risk of fence collision mortality would be low and anti-strike markers would not be required to comply with ODFW’s latest management guidelines.

Another risk factor identified in the Monograph, the Oregon Strategy, and the 12-Month Finding is West Nile virus spread by mosquitoes around standing water (Knick and Connelly 2011, ODFW 2011, USFWS 2010). Sage-grouse are susceptible to West Nile Virus (Clark *et al.* 2006) and mortality may be as high as 100 percent (Naugle *et al.* 2004) in certain areas. The virus is primarily transmitted by infected mosquitoes, and was first detected in southeastern Oregon near Burns Junction in 2006, and then later near Crane and Jordan Valley that same year. Across the species range, total mortalities attributable to West Nile Virus have markedly declined since 2003. The virus has not been detected near the allotment or in southeast Oregon since the first observations in 2006 (DeBess 2009). Existing water troughs are designed to minimize overflow and minimize potential for the production of mosquitoes. Alternative 2 would not have any substantially different effects on suitable mosquito larval habitat at water troughs compared to Alternative 1. There is no new water development projects proposed in the allotment.

Therefore, the risk of virus spread or associated mortality would be low and identical under all alternatives.

Effects of Alternatives 1 and 2

Due to the lack of suitable habitat within the allotment, continuing grazing under these two alternatives would have minor effects on sage-grouse nesting and brood-rearing/summer habitat within the allotment. The diversity of native plants and residual cover currently classified as marginal habitat for sage-grouse would be maintained or improved under the livestock management associated with Alternatives 1 and 2. The presence of herbaceous vegetation within each pasture would not increase the available vertical or horizontal screening cover, but would retain forbs and habitat for insects, which are important to sage-grouse during the spring and summer months (Drut *et al.* 1994, Gregg and Crawford 2009). Continued grazing would have little effect on suitable or marginal quality winter habitat.

Golden eagle nests do occur on the allotment. The nest is located in cliff like habitat and should not be affected by Alternatives 1 or 2. Stable trends for vegetation on the allotment should continue to provide adequate forage for golden eagle prey species, resulting in an adequate food supply for nestling and adult eagles.

Effects of Alternative 1

Current grazing management has met Rangeland Health Standard 5 for wildlife habitat (BLM 2005). Under current management stocking rates, livestock grazing does not appear to be limiting wildlife habitat, including big game, nongame bird and mammals, raptor, or migratory bird habitat within the allotment. Existing vegetation communities and associated wildlife habitat would be maintained across the allotment. (Refer to the Upland Vegetation and Riparian and Wetland sections of this EA for a discussion of these vegetation impacts). Rangeland Health Standard 5 (BLM 2005) would continue to be met and the allotment would continue to provide adequate quality wildlife habitat that is capable of supporting an appropriate assemblage of sagebrush-dependent wildlife species.

For these reasons, current grazing management would continue to maintain or provide wildlife habitat for these species over the life of the permit.

Effects of Alternative 2

Under this alternative authorized livestock grazing within the allotment would be reduced by 50%, resulting in a reduction of 37 AUMs. Most of the current use occurs near only one reliable water source (hot springs) or in the crested wheatgrass seeding in the allotment. Therefore, a negligible portion of wildlife habitat within the allotment would be impacted because there would be fewer livestock congregating at existing concentration areas, impacts to wildlife habitat across the majority of the allotment would be dispersed and much less concentrated. The impacts of this alternative on wildlife habitat in general would be slightly less than to Alternative 1 and would provide adequate habitat for all wildlife species over the life of the permit.

Effects of Alternative 3

Under this alternative, the impact would be similar to Alternatives 1, and 2. The current permit would not be renewed and livestock grazing would not be authorized for a period of 10 years. Owners of livestock would be required to keep livestock off public land by either herding or constructing fences to prevent trespass. The allotment boundary fences would still need to be maintained by the BLM or adjacent permittees to prevent livestock trespass into the allotment from adjacent pastures.

Livestock Grazing Management

Affected Environment:

This is a ten year term grazing permit authorizing 74 AUMs of cattle use in Cox Individual Allotment (00217). The season of use is from January 1st thru March 14th. Grazing is managed under a winter grazing system utilizing 4 pastures (Tables 2 and 3).

There is only one reliable water source (hot springs) in the allotment. There are 2 other small developments associated with the natural intermittent drainage in Fisher Canyon (Fisher Canyon Waterhole) and along Fish Creek (Ox Reservoir) and a third unnamed waterhole located in the southwest corner of the Estelle Calderwood Pasture (Map 2), but they retain water only in wetter years. Therefore, while all the pastures are available each year, most of the current grazing use occurs in the Estelle and Fall Pastures near the hot springs or in the crested wheatgrass seeding in the South Pasture. In years where water is available in Fisher Canyon or Fish Creek, cows are placed in these pastures (Fisher Canyon and South) to take advantage of this water. The allotment is used in conjunction with the state land lease to the west. Therefore, the use period can vary from 2 weeks to 10 weeks depending on the water availability and conditions on the state land.

The allotment is categorized as an “M” or “maintain” category and this category was determined by the following criteria:

- Present range condition satisfactory
- Allotments have moderate to high resource production potential, and are producing near their potential (trend is moving in that direction)
- No serious resource-use conflicts exist
- Opportunities may exist for positive economic return from public investments
- Present management appears satisfactory
- Other criteria appropriate to area

Range Condition

An interdisciplinary team conducted a Rangeland Health Assessment (RHA) within the allotment in 2005 to determine if grazing management was in conformance with the applicable standards. The RHA was reviewed again as part of this environmental analysis. Current grazing management practices or levels of grazing use in the Cox Individual Allotment are either

meeting or are making significant progress towards meeting *Standards for Rangeland Health in Oregon/Washington* (BLM 1997). The findings of the RHA for this allotment are summarized in Table 33 and are incorporated in their entirety herein by reference (BLM 2005).

Table 9. Summary of Rangeland Health Assessment for Cox Individual Allotment (BLM 2005, 2007d, and 2013)

Standard	Determination	Comments
1. Watershed Function – Uplands	Met	Upland soils in the allotment exhibit infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil is appropriate
2. Watershed Function - Riparian/ Wetland Areas	Met	There are about 50 acres of palustrine wetlands, but no perennial streams within the allotment. These wetland areas were rated at Proper Functioning Condition (PFC) and were meeting Standard 2 (related to riparian/wetland function). The spring head for the hot springs was found to be non-functional. Grazing on the (private) spring head was uncontrolled and had resulted in a hummocks and a decline of riparian vegetation at the site (BLM 2005). In 2006 a fence was constructed to protect the spring head from grazing. In November 2007 (BLM 2007d) another assessment was done and concluded the vegetation at the spring head had improved substantially and livestock grazing was no longer limiting Riparian/Wetland function (BLM 2007d).
3. Ecological Processes	Met	Healthy, productive, and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow, and the hydrologic cycle.
4. Water Quality	Met	No surface or ground water within the allotment has been listed for failing to meet State Water Quality standards.
5. Native, Threatened, Endangered, and Locally Important Species	Met	The deer and pronghorn populations are healthy and stable in number within the allotment. Habitat quantity and quality do not appear to be limiting population size or health. The allotment also provide habitat for numerous small and nongame birds and mammals common to the Great Basin. There are no known sage grouse leks found within the allotment or pygmy rabbit habitat. The allotment also provides habitat for raptors and other sensitive species, as well as, one federally listed species. No critical habitat or limitations have been identified for any of these species which include wintering bald eagles, various sensitive bat species, or Peregrine falcons. This area has been surveyed for Bureau special status plants and no plants were found. In 2005 there are no known Bureau special status plants found within the allotment.

Environmental Consequences:

Effects of Alternative 1

Actual use, utilization, and climate data have been summarized in the allotment monitoring file and indicate that livestock grazing levels are sustainable at the current forage allocation for the allotment. Trend photos indicate a stable trend in the key area of the allotment, and the current winter grazing system is meeting all Standards and Guidelines. Livestock grazing management is maintaining a vegetative community that supports other resources objectives and uses.

Existing range improvements would be maintained as needed to support continued livestock management objectives.

Though the average actual use over the last 10 years has been 62 AUMs, the authorized grazing levels would remain at 74 AUMs under Alternative 1. This level of use, along with managed grazing, would provide a sustainable forage base. There could potentially be a decline in forage production over the long-term as western juniper continues to expand into the area in the absence of wildfire.

Effects of Alternative 2

Under this alternative authorized livestock grazing within the allotment would be reduced by 50%, resulting in a reduction of 37 AUMs. The permittee would need to replace 37 AUMs of lost forage with private land forage or hay in the general vicinity for a three year period. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section. Existing range improvements would be maintained as needed to support continued livestock management objectives.

Effects of Alternative 3

Under this alternative, livestock grazing on public land within the allotment would not be authorized. The permittee would need to replace 74 AUMs of lost forage with private land forage or hay in the general vicinity for a ten year period. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section.

The permittee could opt to fence off up to 380 acres of private land contiguous to hot springs and continue to graze that portion of the allotment.

Existing range improvement projects on public land within the allotment would not be maintained. However, the allotment boundary fences would still need to be maintained by the BLM or adjacent permittees to prevent livestock trespass into the allotment from adjacent pastures.

Native American Traditional Practices

Affected Environment:

The allotment is located within a pre-contact and modern native American traditional use area. Some members of the Burns Paiute Tribe and the Fort Bidwell Indian Community have ancestors one to two generations back that used the Warner Valley area and may have used the allotment in their seasonal economic activities. The surrounding Warner Valley is rich in water sources and the sandy areas would have supported stands of culturally important grasses such as Indian Rice Grass, which was a staple in their diet.

Past conversations between The Burns Tribe and The Fort Bidwell Indian Community staff and individual members and BLM cultural staff indicate that native Americans consider all

manifestations of their past culture to be important and sacred. However, the BLM is not aware of any specific locations within the allotment that are currently important to the two tribes or any of the families that make up their membership for religious, ceremonial, or plant gathering purposes.

Environmental Consequences:

BLM is not aware of any known uses of the allotment for plant collecting or religious uses and, therefore, would not expect any of the alternatives to impact native American traditional uses. In addition, none of the alternatives would change the nature of any traditional use sites in the allotment, if they exist.

Cultural Resources

Affected Environment:

Only about 500 acres of the Allotment have had a Class III survey performed on them. In addition, much of the allotment has had “intuitive” survey completed where likely site areas were examined and sites recorded. Surveys have been done in the past for geothermal leasing (intuitive survey), land exchanges, water developments and road proposals in the area. The fact that cultural surveys have not been completed on 100% of the allotment represents a resource for which there is “incomplete or unavailable information”. According to the CEQ’s NEPA regulations (40 CFR Part 1502.22), when an agency is evaluating impacts and there is incomplete or unavailable information, the agency must make clear that such information is lacking. Further, if the information “cannot be obtained because the cost of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include.... (1) a statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts....; (3) a summary of the existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant impacts... and (4) the agency’s evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community...”. The DOI NEPA regulations state that these costs are not just monetary, but can also include “social costs, delays, opportunity costs, and non-fulfillment or non-timely fulfillment of statutory mandates” (43 CFR Part 46.125). The costs of obtaining a comprehensive survey of cultural resources across the pasture is estimated at \$800 to \$1080 per acre based upon current costs for contract survey work. Surveying the remaining 746 acres of public land within the allotment would cost approximately \$596,800 to \$805,680 and is considered to be exorbitant.

Five sites have been documented specifically within the allotment. One site is an historic grave, three are pre-historic rock art sites, and one is a large pre-historic campsite or village site located at a spring. The information from the pre-historic sites within and surrounding the allotment indicates that the area was likely used for seed gathering and hunting, especially in the last 2,000 to 4,000 years. Use prior to that may have been focused around shore lines and water sources. Some evidence of occupation during the 8,000 to 10,000 BP period has been observed in the surrounding area.

Environmental Consequences

Effects Common to All Alternatives

The most common impacts to cultural sites in the past were livestock trampling, wind erosion, and sheet wash erosion from rain. The allotment was grazed by sheep and cattle at various levels for the last 130 years. In former times, grazing levels were considerably higher than today because the grazing management infrastructure had not been developed to the degree we have today and livestock numbers were unregulated prior to 1946. As a result, cultural resources sites were likely affected more intensely and to a greater soil depth in the past than under the more controlled livestock grazing management of practices of today.

Grazing effects by current levels of livestock use across the majority of the allotment would generally continue to be dispersed and low under each alternative, except in high congregation areas. Continued erosion from wind and water would also be expected. Minor trampling effects from large wildlife would continue to occur under all alternatives.

Effects of Alternative 1

Based on field observations by BLM cultural resources staff over the last 38 years on known cultural resource sites in the Lakeview Resource Area, livestock can impact cultural materials located in the top 12 inches of the soil profile. These effects include ground cover removal, surface scuffing, and hoof shear. In the allotment, existing sites appear to be concentrated along lake shorelines and in the talus slopes below the rims. The reoccurring cycle of ground disturbance, removal of vegetative cover, along with water and wind erosion can lead to continued loss of soil and further exposure of a given site, and loss of vertical context within the site. Cultural materials within the top 12 inches of soil can be exposed to trampling damage, resulting in reduced site integrity. The deepest disturbance is typically seen at sites located in congregation areas (near water sources and trailing areas) where concentrated hoof shear is common. Generalized dispersed grazing, with light hoof shear and surface scuffing, can result in light (2 inches) to moderate (6 inches) depth of impacts to some sites. Given the nature of the sediments where most of the known sites are located, moderate to severe trampling may be occurring to these sites.

Under this alternative, cultural resources would continue to be affected by livestock use, primarily in existing high concentration areas (about 3.5% of the allotment).

Effects of Alternative 2

Alternative 2 would have less effect on cultural resources than Alternative 1 because there would be fewer livestock congregating at existing concentration areas.

Effects of Alternative 3

Alternative 3 would have less impact on cultural resources than either Alternatives 1 or 2 by eliminating the congregation of livestock on all public lands within the allotment. However, this would not eliminate all effects of livestock trampling, as private lands within the allotment could

still be grazed and any cultural sites present in those congregation areas would continue to be impacted.

Recreation

Affected Environment:

There are currently no developed recreation sites within the Cox Individual Allotment, nor are there any planned for the future. Recreation in this allotment is managed primarily for semi-primitive motorized activities, opportunities, and experiences (see Map R-3 in BLM 2003b). Recreation in the area occurs predominantly in a natural or natural appearing landscape. User interaction is low, but there is evidence of other users. Additionally, there is a moderate probability of experiencing isolation, closeness to nature, and self-reliance in outdoor skills. However, there are few opportunities for solitude within the allotment where a visitor could avoid the presence of others in the area due to little vegetative or topographic screening. Further, developments associated with a private ranch within the allotment limits the ability to avoid the sights and sounds of others.

Use of motorized vehicles is permitted on roads, trails, and cross-country travel (see Map R-7 of BLM 2003b). The primary recreation activities in this allotment are upland game bird (e.g., chukar and quail), waterfowl, and big game (e.g., mule deer and pronghorn antelope) hunting. Other recreation activities that may occur in the allotment include: wildlife viewing, photography, camping, hiking, backpacking, horseback riding, target shooting, petroglyph viewing, and use of a hot springs which is located half on BLM and half on private lands.

Environmental Consequences:

Effects of Alternative 1

The No Action Alternative would continue to have minimal effects to recreation opportunities across the allotment. Current levels of recreation activities, opportunities and experiences would be expected to remain relatively constant.

Effects of Alternative 2

Alternative 2 would marginally enhance recreational experiences and opportunities across the allotment. Users seeking isolation and naturalness, as well as hunters and wildlife viewers, would benefit slightly from a 50% reduction in AUMs due a slight decrease in the sights and sounds of cattle. In addition, recreational users would experience a slightly increased potential to watch and hunt wildlife in a more natural appearing environment, as trampled areas around water developments would recover to some degree.

Effects of Alternative 3

The No Grazing Alternative would moderately enhance recreation activities, opportunities, and experiences in the allotment. Naturalist's and wildlife dependent recreationist's experiences in

these areas would be enhanced by the removal of livestock grazing due to the absence of the sights and sounds of cattle, as well as from improvements to natural character of areas recovering from concentrated livestock use (compacted cattle trails and trampled areas around water sources).

Visual Resources

Affected Environment:

Cox Individual Allotment is comprised of open flats within Warner Valley (elevation 4,480 ft.), west facing slopes of moderate sized fault scarps (elevation 5,396 ft.) along the eastern boundary, and the mouth of Fisher Canyon in the north. Views looking out from the allotment include the Warner Valley and Crump Lake in the foreground with Fish Creek Rim and Lynch's Rim in the background. Vegetation in the area is comprised primarily of big sagebrush, crested wheatgrass, cheatgrass, Sandberg bluegrass, bluebunch wheatgrass, bottlebrush squirreltail, and Thurber's needlegrass. Observable developments in the area include: 8.5 miles of motorized routes, 1.5 miles of reclaiming routes, 0.5 miles of pipelines, 9.5 miles of fences, 1 developed hot spring, 1 reservoir, 2 waterholes, 236 acres of non-native seeding, and 186 acres of past fire disturbance.

Cox Individual Allotment is managed according to Visual Resource Management classes VRM III and VRM IV. Approximately 93% of the BLM-administered lands within the allotment fall within VRM class III. About 7% falls within VRM class IV. The management objectives for these classes are as follows:

VRM III is to "partially retain the existing character of the landscape, moderate levels of change are acceptable."

VRM IV is managed to allow for "major modifications to the landscape," though "every effort should be made to ... minimize disturbances and design projects to conform to the characteristic landscape" (BLM 2001, page 290).

Environmental Consequences:

Effects of Alternative 1

The No Action Alternative would continue to have negligible effects to existing visual quality. Current visual objectives for VRM classes III and IV would continue to be achieved.

Effects of Alternative 2

Alternative 2 would utilize the same grazing period and developed infrastructure to manage livestock within the allotment. Nonetheless, this alternative would marginally enhance visual resources by reducing the occurrence of viewing non-native animals within the landscape and by slightly improving the natural appearance of the allotment as trampled areas around water developments would recover to some degree. Visual objectives for VRM classes III and IV would continue to be achieved.

Effects of Alternative 3

The No Grazing Alternative would moderately enhance visual resources in the allotment by eliminating the occurrence of viewing non-natives animals within the landscape and by the improvement in esthetically pleasing upland plant ecosystem (e.g. naturally recovering cattle trails and trampled areas around water sources). Furthermore, the visual impacts of observable developments scattered across the allotment would likely remain indefinitely until such time that they either deteriorate or funds and resources are made available to facilitate their removal. Visual objectives for VRM classes III, and IV would continue to be achieved.

Social and Economic Values

Affected Environment:

The economy of Lake County is based primarily on agriculture, timber, livestock, and government sectors. Livestock grazing and associated feed production industries are major contributors to the economy of Lake County. The most common is the raising of cattle and calves for beef. In 2010, an estimated 52,500 cow/calves were in Lake County Oregon (Pete Schreder, Personal Communication, Lake County Agricultural Extension Agent, November 14, 2012). In 2010, Lake County ranchers sold an estimated \$35,000,000 worth of cattle and calves or related beef products from public lands.

The Cox Individual Allotment accounts for 74 AUMs for about 2 months of the year and this calculates out to forage for about 37 cows for 2 months. The 37 cows would produce about 30 calves for market, assuming 2 bulls and an 85% calf crop. This allotment accounts for only about 16% of the 37 cows yearlong forage demand.

Environmental Consequences:

Effects Common to All Alternatives

Public lands in and around the allotment would continue to contribute social amenities such as open space and recreational opportunities. These amenities encourage tourism in the surrounding region and provide economic benefits to nearby communities such as Lakeview, Plush and Adel, though the specific contribution of this small allotment cannot be accurately estimated.

Effects of Alternative 1

Under this alternative, the Federal Government would continue to collect about \$100 annually in grazing fees (74 AUMs @ \$1.35/AUM). This commodity use of public lands would continue to generate revenues for the Federal Government on an annual basis over the life of the grazing permit.

The rancher/permittee would continue to produce approximately 30 calves each year associated with the Cox Individual Allotment under the grazing permit, providing continued economic stability for the permittee and contributing approximately 0.06% to the total county-wide cattle production. Based on the current price of a 600-pound stocker calf at \$163/cwt (100 lbs. of live

weight) (Stockmans Journal, 2012) the permittee would generate a gross annual income of approximately \$29,340. This is an estimate that would vary every year depending on the price of beef and the weight/condition of the calves at the time of sale.

Effects of Alternative 2

Under this alternative, the Federal Government would collect 50% less grazing fees from the allotment, estimated at about \$50 annually (37 AUMs @ \$1.35/AUM). Under this alternative the permittee would either have to reduce his herd size by 50% or find alternative forage.

The permittee could chose to find alternative forage at an estimated cost of about \$7,659 to feed hay for 2 months. This is based on the current cost of hay, approximately \$230/ton (Oregon-Washington weekly hay report, 2013) and assuming feeding 30 lb./day/cow for 2 months, not including transportation costs of moving the hay to the ranch. If the permittee could lease private land the estimated cost would be approximately \$274, assuming (37 AUMs)(50%) (\$14.80). The average pasture rate for private land forage in Oregon is \$14.80 per AUM.

The permittee could also do a combination of private land leasing and feeding hay, so the additional cost would vary between \$274 and \$7,659 per year.

If the rancher could not secure other suitable pasture land or could not afford these increased costs, then his gross revenue would be reduced by 50%. Using the same assumptions as Alternative 1 the gross income for the permittee would be (600-pound stocker calf at \$163/cwt) (15 calves) approximately \$14,670. This would represent a loss of gross income compared to Alternative 1 of approximately \$14,670. This estimate would vary annually depending on the price of beef and the weight/condition of the calves at the time of sale.

At the county-wide scale, approximately 15 calves would no longer be produced in Lake County, resulting in a 0.03% annual reduction in county-wide cattle production and a gross economic loss to the county's economy of about \$14,670 per year.

Effects of Alternative 3

A minimum annual loss of \$100 would occur to the Federal Government due to the loss of grazing fees collected from this permittee (74 AUMs @ \$1.35/AUM) under this alternative. This would also result in the loss of suitable grazing land for the local rancher/permittee. The rancher would then have to find suitable pasture to graze his livestock elsewhere in the surrounding region or feed additional hay, resulting in additional production costs.

The current cost of hay is approximately \$230/ton (Oregon-Washington weekly hay report, 2013) and assuming feeding 30 lb./day/cow. This would result in approximately \$7,659 in additional costs to feed the permittee's 37 cows for 60 days, not including transportation costs of moving the hay to the ranch. The average pasture rate for private land forage in Oregon is \$14.80 Per AUM. The annual cost to the rancher for renting private pasture land would be approximately \$1095 (74 AUMs * \$14.80).

The permittee could potentially do a combination of private land leasing and feeding hay to make up for the lost forage on public lands, so the cost would be between \$1,095 and \$7,659 annually.

If the permittee could not secure other suitable pasture land or could not afford these increased costs, then approximately 30 calves would no longer be produced in Lake County, resulting in a 0.06% annual reduction in county-wide cattle production. Based on the current price of a 600-pound stocker calf at \$163/cwt (100 lbs. of live weight) (Stockmans Journal, 2012), this could result in an economic gross loss to both the permittee and the county economy of about \$29,340 per year.

In addition, the permittee could potentially fence up to 380 acres of private land within the allotment to create a completely private pasture with about 1.25 miles of fence and continue to graze the private land within the allotment. This would require a one-time cost of approximately \$3,000-\$4,000.

Cumulative Effects

Analysis Scale and Timeframe

For the purposes of this analysis, cumulative impacts are generally addressed at the allotment scale. The reasons for choosing this analysis scale include the fact that issuing a permit is a decision that affects the entire allotment and BLM has a good idea of other potential reasonably foreseeable actions that may occur within the allotment due to management direction identified in the *Lakeview Resource Management Plan/Record of Decision*. However, the analysis spatial scale can vary somewhat depending upon the resource value or use being addressed. The timeframe of analysis is defined as the same 15-20 year expected life of the *Lakeview Resource Management Plan/Record of Decision*. The reason for choosing this timeframe is because this represents the same analysis timeframe considered in the Lakeview Proposed RMP/Final EIS (BLM 2003a) and portions of that analysis may be appropriate for impact tiering purposes.

Known Past Activities

The Council on Environmental Quality (CEQ) issued cumulative impact guidance on June 24, 2005, that states the “environmental analysis required under NEPA is forward-looking,” and review of past actions is required only “to the extent that this review informs agency decision-making regarding the proposed action.” Use of information on the effects of past action may be useful in two ways: one is for consideration of the proposed action’s cumulative effects, and secondly as a basis for identifying the proposed action’s direct and indirect effects.

The CEQ stated that “[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” This is because a description of the current state of the environment (i.e. affected environment section) inherently includes the effects of past actions. Further, the “CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions.” Information on the current

environmental condition is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis than attempting to establish such a starting point by adding up the described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination.

The second area in which the CEQ guidance states that information on past actions may be useful is in “illuminating or predicting the direct and indirect effects of a proposed action. The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects”.

The Department of Interior issued some additional guidance related to past actions which state, “when considering the effects of past actions as part of a cumulative effects analysis, the Responsible Official must analyze the effects in accordance with 40 CFR 1508.7 and in accordance with relevant guidance issued by the Council on Environmental Quality, such as “The Council on Environmental Quality Guidance Memorandum on Consideration of Past Actions in Cumulative Effects Analysis” dated June 24, 2005, or any superseding Council on Environmental Quality guidance (see 43 CFR 46.115)”.

Based on this guidance, BLM has summarized known disturbances from past or on-going management activities that have occurred on BLM-administered lands which may contribute to cumulative effects within the allotment. These include: livestock grazing, range improvement construction and maintenance, road construction and maintenance, and dispersed recreational use. These same kinds of activities have also occurred on private lands within or immediately adjacent to the allotment.

The area within the allotment has historically been grazed by cattle. Prior to the Taylor Grazing Act of 1935, grazing on public lands was essentially uncontrolled. After the Taylor Grazing Act, allotments were established tied to private base property owned by a permittee, and were initially under the management responsibility of the Grazing Service. Under the Grazing Service and then under the new BLM in 1946, the number of grazing livestock was higher and the pattern of grazing use was more intense than today. In 1999, about 72% of the public land in the Cox Individual Allotment was transferred to the O’Keeffe Allotment by agreement between the Nature Conservancy, John O’Keeffe (permittee), and BLM. This transfer included 143 AUMs, leaving only 74 AUMs authorized in the Cox Individual Allotment (BLM 2003b, p. A-37, as maintained in 3/20013).

Based on a GIS analysis of current data for the allotment, approximately 8.6 miles of open roads and primitive motorized routes and 1.2 miles of reclaiming routes (14.6 acres of total road-related disturbance based on an average 12-foot width) have been constructed or created within the allotment. As described previously, there are about 5 miles of existing fence, a developed hot springs, an unnamed waterhole, and 2 intermittent stream channels with associated water developments that exist within the allotment and have resulted in approximately 62 acres of high concentration livestock use. This represents an estimated total of about 76.6 acres of past or on-going ground disturbance (4.3% of the allotment).

All of these past or on-going activities have affected or shaped the landscape within the allotment into what it is today. Current resource conditions are described previously in the “Affected Environment” portions of this chapter, as well as in the Rangeland Health Assessments for the allotment (BLM 2005, 2007d, 2013). In particular, the Visual Resources section above provides an overview of existing disturbances within the allotment.

Reasonably Foreseeable Future Actions

Cumulative Effects Common to All Alternatives

For purposes of this analysis, total acres of concentrated ground surface disturbance or potential for surface recovery served as the main indicator of cumulative impacts.

Road and range improvement maintenance activities would occur on an as needed basis and generally would not cause additional surface disturbance beyond what already exists on the ground. Further, such activities are considered to be so minor as to be categorically excluded from NEPA analysis (BLM 2008b). Total road-related ground disturbances under all alternatives would be similar and is estimated to remain at about 14.6 acres. However, it is possible that some of the reclaiming routes would continue to revegetate during this timeframe and reduce this disturbance by 1-2 acres.

The amount and location of future dispersed recreational activities are difficult to estimate, but are not expected to result in any additional, measurable long-term surface disturbance in the allotment. While there is also a risk of a future wildfire within the allotment, it is impossible to predict how much area would likely burn, how intensely the area would burn, how much fire suppression would be employed, and how much area may need to be actively rehabilitated after the fire. For this reason, fire disturbances are not considered further in this analysis.

Existing or new infestations of noxious weeds would be treated in accordance with the most current Integrated Weed Treatment Plan(s) and related policies (such as BLM 2004b, 2007b, 2007c). Beyond the direct effects described earlier in this chapter, it is difficult to predict the aerial extent of these potential future impacts. However, the impacts of these treatments have already been analyzed and these analyses are incorporated by reference in their entirety. Such impacts could include: short-term increases in surface disturbance and soil erosion, coupled with reduction in weed distribution, native vegetation recovery, protection or restoration of wildlife habitats, maintenance of recreation experiences, maintenance of livestock forage production, maintenance of visual quality, and minimal risk to human health over the long-term (BLM 2004b, Pages 10-20).

The total acres of concentrated livestock use or heavy ground disturbance associated with livestock grazing management activities on soils and BSCs, upland vegetation, wetland and riparian areas, cultural resources, and wildlife and special status species habitat does not vary substantially between alternatives. Alternative 1 represents the amount of ground disturbance within the allotment associated with all past and present management activities (76.6 acres; 4.3%) and would continue for another 10-year period of time. Slight incremental decreases in existing ground disturbance within the allotment would occur under both Alternatives 2 (45.6

acres; 2.5%) and 3 (14.6 acres; 0.8%) over the same period of time. None of these acreages represents a significant amount of ground disturbance when considered within the context of the allotment as a whole.

None of the alternatives would have any measureable or substantial incremental cumulative effects on native American traditional practices, recreation, or visual quality, as the analysis contained earlier in this chapter revealed that there would be little or no direct or indirect effects on these values/issues.

REFERENCES

BCME. 2008. Recovery Strategy for the Pallid Bat (*Antrozous pallidus*) in British Columbia. Prepared for the British Columbia Ministry of the Environment, Victoria, B.C.

Belnap, J., J. Kaltennecker, R. Rosentreter, J. Williams, S. Leonard, and D. Eldridge. 2001. Biological Soil Crusts: Ecology and Management. USDI, BLM and USGS Technical Reference TR-1730-2.

BLM. 1979a. Wilderness proposed initial inventory. Roadless areas and islands which clearly do not have wilderness characteristics, Oregon and Washington. April 1979. USDI, BLM, Oregon and Washington State Office. Portland, OR.

BLM. 1979b. Wilderness review. Initial inventory. Final decision on public lands obviously lacking wilderness characteristics and announcement of public lands to be intensively inventoried for wilderness characteristics. August 1979. USDI, BLM, Oregon and Washington State Office. Portland, OR.

BLM. 1979c. Wilderness review. Intensive inventory. Proposed decision on the intensive wilderness inventory of selected area, Oregon. October 1979. USDI, BLM, Oregon and Washington State Office. Portland, OR.

BLM. 1980a. Wilderness Review Intensive Inventory—Final Decision on 30 Selected Units in Southeastern Oregon and Proposed Decisions on Other Intensively Inventoried Units in Oregon and Washington. Oregon/Washington State Office, Portland, OR.

BLM. 1980b. Wilderness Inventory— Oregon and Washington Final Intensive Inventory Decisions. Oregon/Washington State Office, Portland, OR.

BLM. 1989. Oregon Wilderness Final Environmental Impact Statement. Oregon/Washington State Office, Portland, OR. Four Volumes.

BLM. 1991. Wilderness Study Report. OR-EA-91-45-8561.6. Oregon/Washington State Office, Portland, OR. 3 volumes.

BLM, 1996a. Utilization Studies and Residual Measurements. Technical Reference 1734-3 USDI, BLM, Washington Office, Washington, DC.

BLM, 1996b. Sampling Vegetation Attributes. Technical References 1734-4 USDI, BLM, Washington Office, Washington, DC.

- BLM. 1997a. Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington. Oregon State Office, Portland, OR.
- BLM. 2000. Instruction Memorandum No. 2000-022, Change 1. Compliance with the National Environmental Policy Act (NEPA) – Addressing Alternatives for Livestock Grazing Permit Renewals. USDI, BLM, Washington Office, Washington, DC.
- BLM. 2001. Draft Lakeview Resource Management Plan/Environmental Impact Statement. USDI, BLM, Lakeview Resource Area, Lakeview District, Lakeview, OR. 3 volumes.
- BLM. 2003a. Lakeview Proposed Resource Management Plan/Final Environmental Impact Statement. USDI, BLM, Lakeview Resource Area, Lakeview District, Lakeview, OR. 4 volumes.
- BLM. 2003b. Lakeview Resource Management Plan/Record of Decision. USDI, BLM, Lakeview Resource Area, Lakeview District, Lakeview, OR. 3 volumes.
- BLM. 2004. Integrated Noxious Weed Management Program. EA#OR-010-2004-03. USDI, BLM Lakeview Resource Area, Lakeview, OR.
- BLM. 2005. Standards for Rangeland Health Standards Assessment for Cox Individual Allotment #0217. Lakeview Resource Area, Lakeview, OR. also available at <http://www.blm.gov/or/districts/lakeview/plans/inventas.php>
- BLM. 2007a. H-6300-1-Wilderness Inventory Maintenance in BLM Oregon/Washington. April 2007. Oregon/Washington State Office, Portland, OR.
- BLM. 2007b. Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement. USDI, BLM, Washington Office, Washington, DC.
- BLM. 2007c. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Record of Decision September 2007. USDI, BLM, Washington Office, Washington, DC.
- BLM 2007d. Addendum to the Standards for Rangeland Health Standards Assessment for Cox Individual Allotment #0217. Prepared by Allan Munhall, BLM Fisheries Biologist
- BLM. 2008a. H-6300-1-Wilderness Inventory Maintenance in BLM Oregon/Washington. 4-18-08 Current Edition. Oregon/Washington State Office, Portland, OR.
- BLM. 2008b. BLM. H-1790-1 - National Environmental Policy Act Handbook. USDI, BLM, Washington Office, Washington, DC.
- BLM. 2011. Instruction Memorandum No. 2012-043. Greater Sage-Grouse Interim Management Policies and Procedures. USDI, BLM, Washington Office, Washington, DC.
- BLM. 2012a. Manual 6310 – Conducting Wilderness Characteristics Inventory on BLM Lands (Public). USDI, BLM, Washington Office, Washington, DC.
- BLM. 2012b. Wilderness Characteristics Inventory Update for the Hart Mountain South Area. USDI, BLM Lakeview Resource Area, Lakeview, OR.

BLM. 2012c. Rosebud Allotment #00421 Livestock Grazing Permit Renewal. Environmental Assessment DOI-BLM-OR-L050-2012-0028-EA. USDI, BLM, Lakeview Resource Area, Lakeview, OR.

BLM. 2013 Rangeland Health Assessment Update for the Cox Individual Allotment #217 Lakeview Resource Area, Lakeview, OR. also available at <http://www.blm.gov/or/districts/lakeview/plans/inventas.php>.

Clark, L., J. Hall, R. McLean, M. Dunbar, K. Klenk, R. Bowen, and C.A. Smeraski. 2006. Susceptibility of greater sage-grouse to experimental infection with West Nile virus. *Journal of Wildlife Diseases*. 42(1):14-22.

Chung-MaCoubrey, A. L. 1996. Grassland bats and land management in the Southwest. Pp. 54-63 in D.M. Finch (ed.) *Ecosystem disturbance and wildlife conservation in western grasslands*. USFS, GTR-RM-285.

Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.

Daddy, F. M. J. Trlica and C.D. Bonham. 1988. Vegetation and soil water differences among big sagebrush communities with different grazing histories. *Southwestern Naturalist* 33:413-424

Davies, K.W., T.J. Svejcar, and J.D. Bates. 2009. Interaction of historical and nonhistorical disturbances maintains native plant communities. *Ecological Applications* 19(6), pp. 1536-1545.

DeBess, E. 2009. State of Oregon West Nile virus summary report 2008. Oregon Department of Human Services. Portland, OR.

Drut, M.S. W.H. Pyle, and J.A. Crawford. 1994. Technical note: diets and food selection of sage grouse chicks in Oregon. *Journal of Range Management*. 47:90-93.

Gregg, M.A. and J.A. Crawford. 2009. Survival of greater sage-grouse chicks and broods in the Northern Great Basin. *Journal of Wildlife Management*. 73(6):904-913.

Holechek, Baker, Boren, and Dee Galt. 2006. Grazing Impacts on Rangeland Vegetation: What we Learned.

Knick and Connelly. 2011. Greater Sage-Grouse: Ecology and Conservation of a Landscape Species and its Habitats. *Studies in Avian Biology Series* (vol. 38), University of California Press, Berkeley, CA.

Naugle, D.E., C.L. Aldridge, B.L. Walker, T.E. Cornish, B.J. Moynahan, M.J. Holloran, K. Brown, G.D. Johnson, E.T. Schmidtman, R.T. Mayer, C.Y. Kato, M.R. Matchett, T.J. Christiansen, W.E. Cook, T. Creekmore, R.D. Falise, E.T. Rinkes, and M.S. Boyce. 2004. West Nile virus: pending crisis for greater sage-grouse. *Ecology Letters* 7:704-713.

NRCS. 2010. Soil Survey of Lake County, Oregon Southern Part. USDA, NRCS.

ODFW. 2003. Oregon's Mule Deer Management Plan. February 2003. Oregon Department of Fish and Wildlife, Portland, OR.

ODFW. 2005. Greater sage-grouse conservation strategy assessment and strategy for Oregon: a plan to maintain and enhance populations and habitat. Oregon Department of Fish and Wildlife, Salem, OR.

ODFW. 2011. Greater sage-grouse conservation strategy assessment and strategy for Oregon: a plan to maintain and enhance populations and habitat. Oregon Department of Fish and Wildlife, Salem, OR.

ONDA. 2005. Wilderness Inventory Recommendations: Lakeview BLM District. Bend, OR.

Oregon-Washington Weekly Hay Report. 2013. Accessed April, 2013.
http://www.ams.usda.gov/mnreports/ml_gr310.txt.

Ponzetti, J. M., B. McCune. 2001. Biotic soil crusts of Oregon's Shrub Steppe: community composition in Relation to Soil Chemistry, Climate and Livestock Activity *The Bryologist* 104: 212-2225.

PRISM Climate Group. 2011. Data Explorer (First Swale Creek, Oregon). URL
<http://gisdev.nacse.org/prism/nn/>

Rose, J. A., R. F. Miller, and T. Svejcar. 1994. Vegetation and livestock exclusion in the sagebrush steppe. Pages 53-63, *Management of Great Basin Rangelands Annual Report, 1994. Special Report 935.* Oregon State University, Eastern Oregon Agricultural Research Center, Burns, Oregon

Root, H.T., Miller J.E.D., McCune B. 2011. Biotic soil crust lichen diversity and conservation in shrub-steppe habitats of Oregon and Washington. *The Bryologist* 114(4): 796-812.

Schuman, G.E., L.J. Ingram, P.D. Stahl, J.D. Derner, G.F. Vance, and J.A. Morgan. 2009. Influence of management on soil organic carbon dynamics in northern mixed-grass rangeland. Chapter 11 in *Soil Carbon Sequestration and the Greenhouse Effect. 2nd Edition. SSSA Special Publication 57.* Madison, Wisconsin.

Schmidt 2003. Conservation Assessment for the Townsend's Big Eared Bat in the Black Hills National Forest South Dakota and Wyoming. Wyoming Cooperative Fish and Wildlife Research Unit, Laramie, WY.

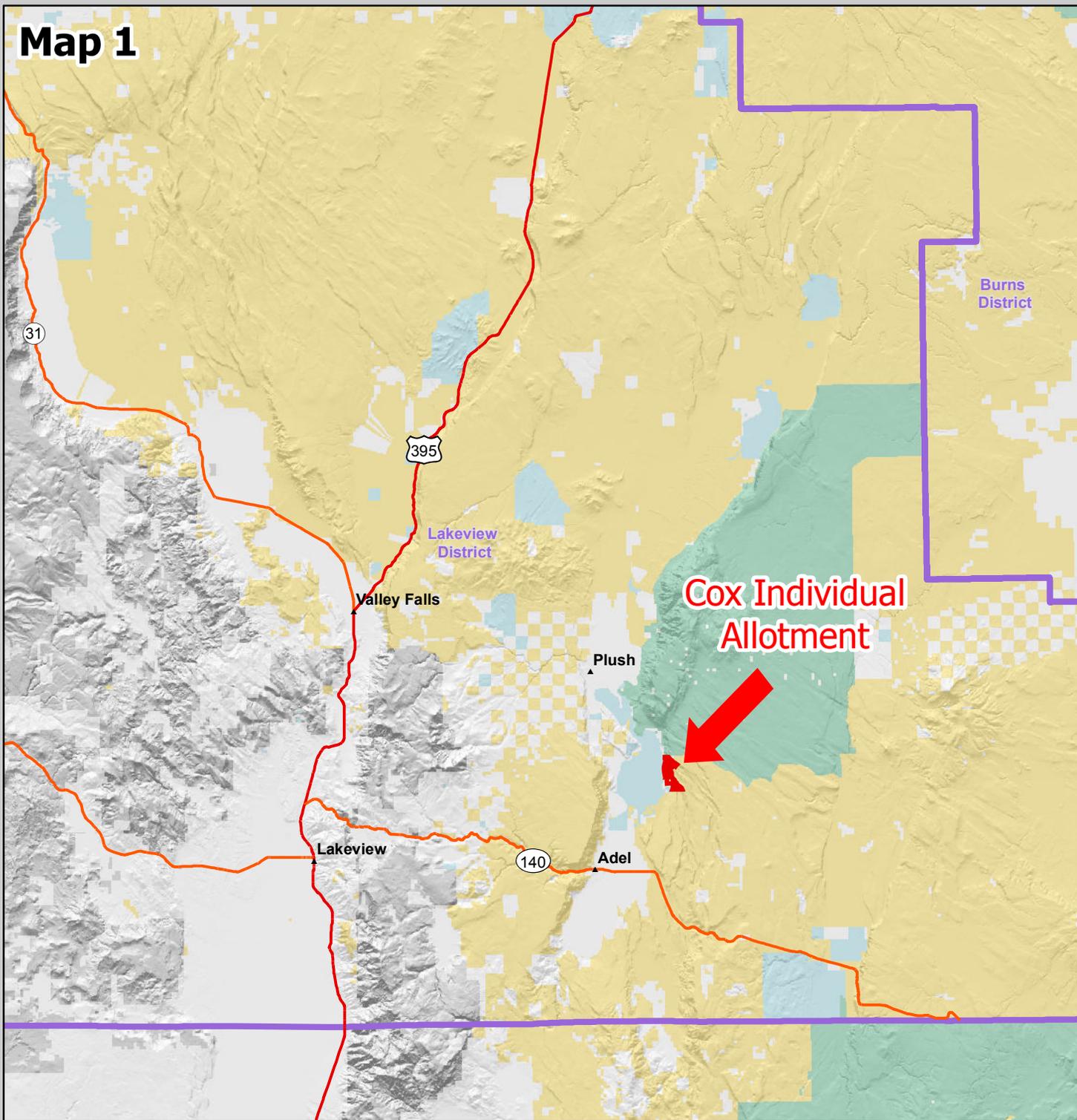
Stiver, S., E. Rinkes, and D. Naugle. 2010. Sage-Grouse habitat assessment framework. Multi-scale habitat assessment tool. Unpublished Report. USDI, BLM, Idaho State Office, Boise, ID. 135 p.

Stockmans Journal. 2012. Central Oregon Livestock Auction, Madras, OR. Vol. 14 Issue 8 June, 8, 2012.

USFWS. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp.

USFWS. 2010. 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; 12-Month Findings for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered; Proposed Rule. *Federal Register* 75:13909-14014.

Map 1



Cox Individual Allotment Vicinity Map

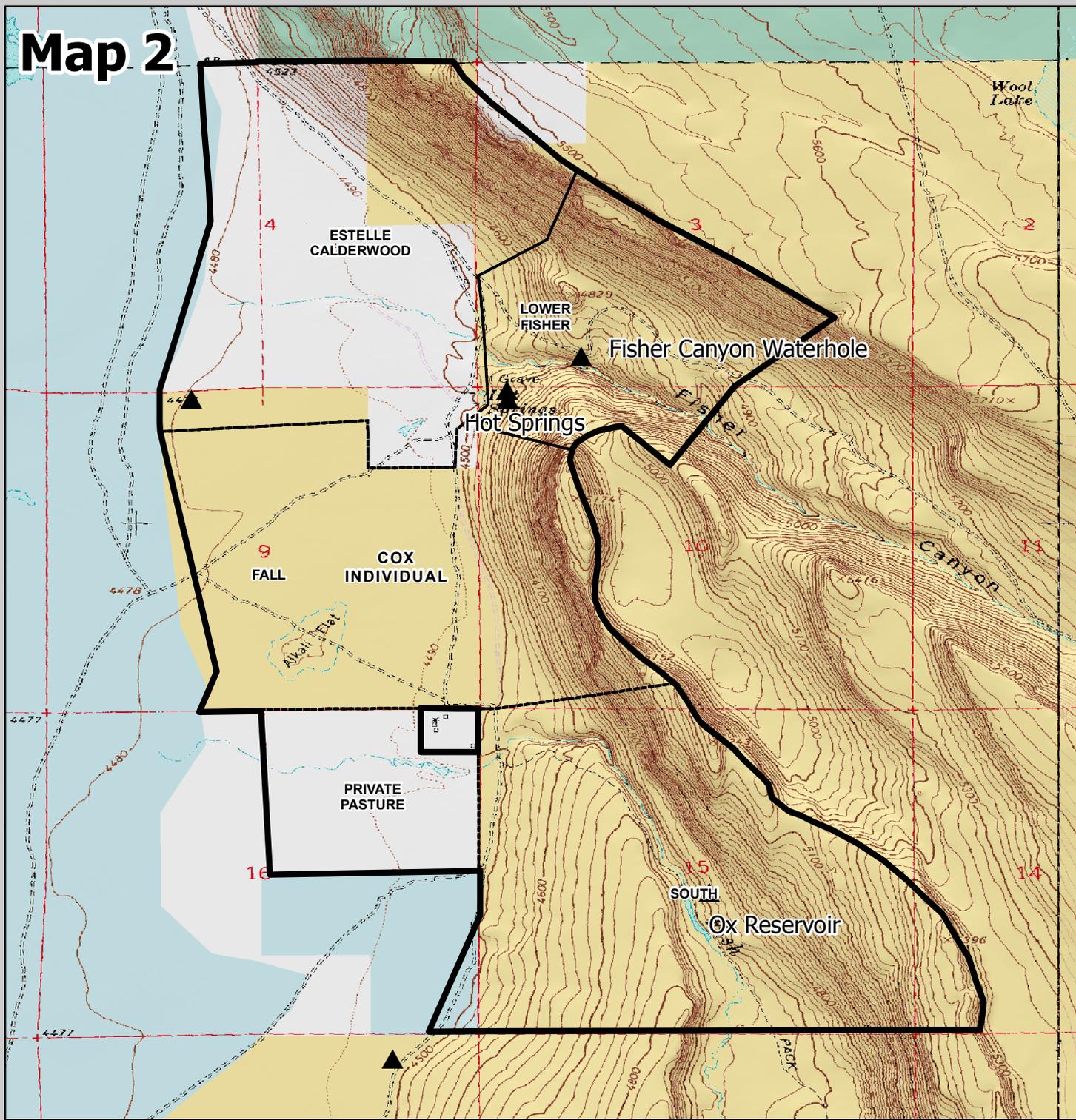
Legend

- Cox Individual Allotment
- Bureau of Land Management
- U.S. Fish and Wildlife Service
- State
- Private/Unknown



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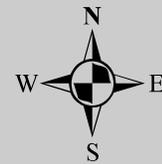
Map 2



Cox Individual Allotment

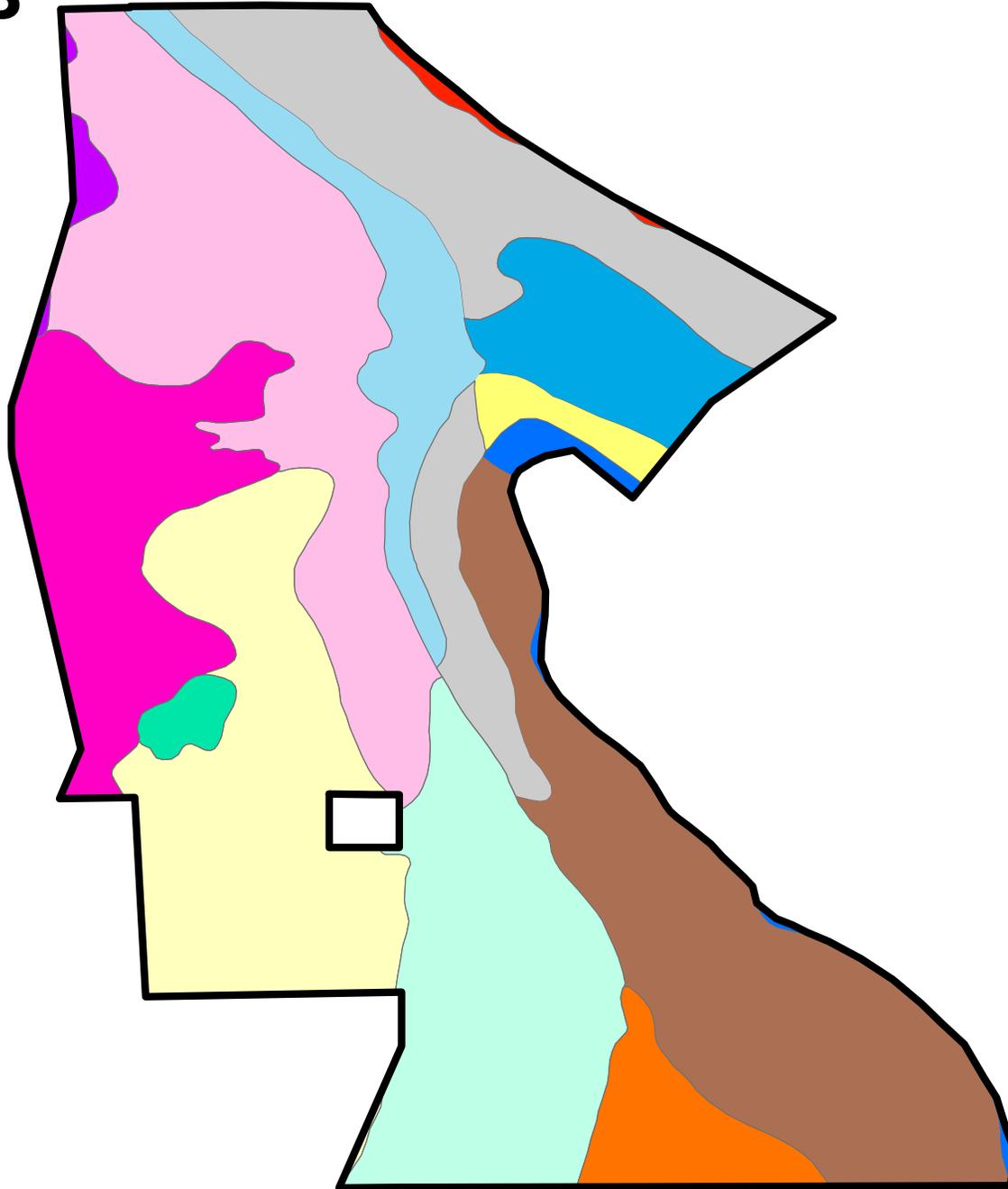
Legend

- ▲ water_developments
- ▭ Cox Individual Allotment
- Bureau of Land Management
- U.S. Fish and Wildlife Service
- State
- Private/Unknown



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Map 3



Cox Individual Allotment Soils

Legend

Cox Individual Allotment

Cox_Individual_Soils

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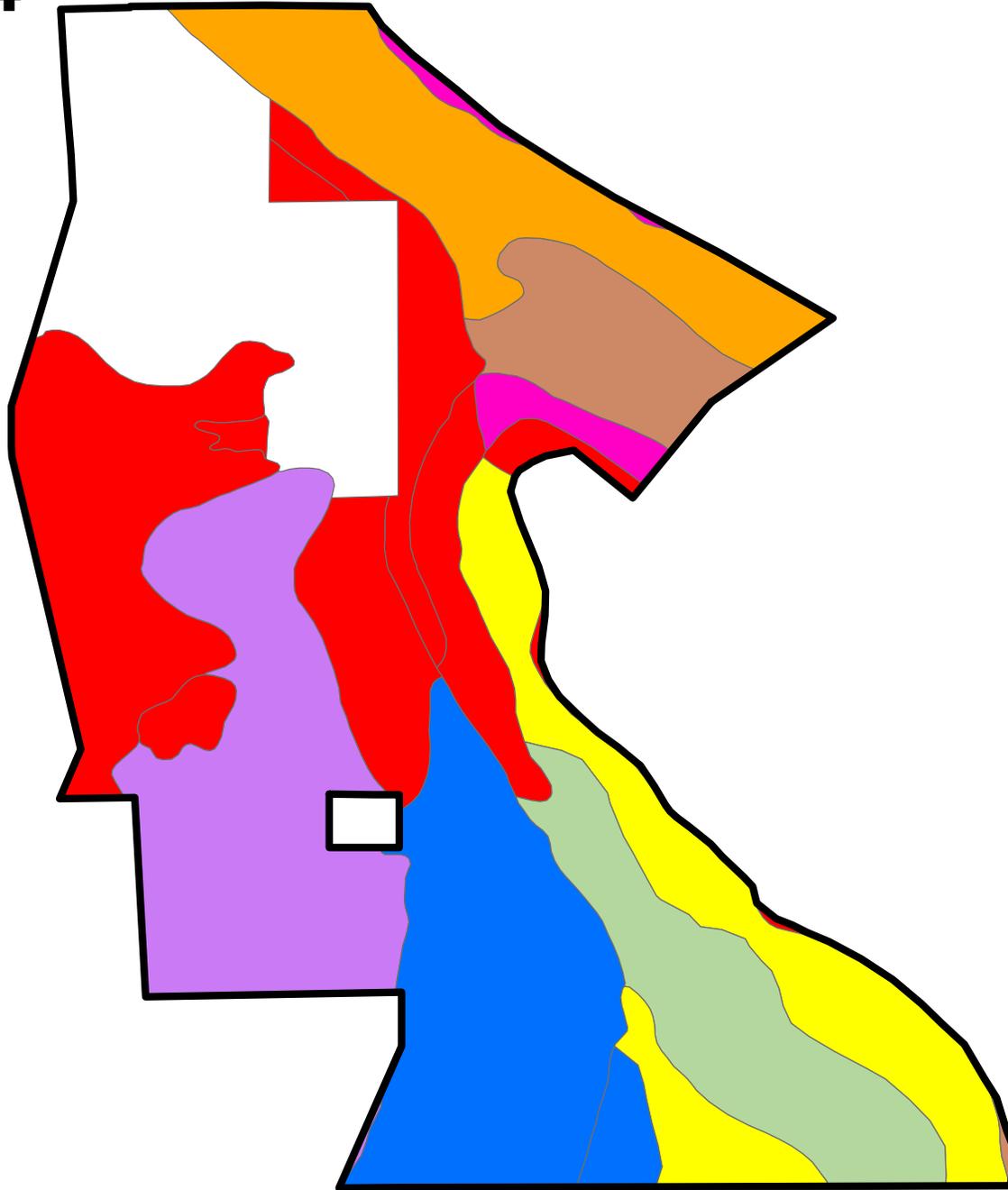
MUNAME

- ALVODEST-PLAYAS COMPLEX, 0 TO 1 PERCENT SLOPES
- BORAVALL SILT LOAM, 0 TO 1 PERCENT SLOPES
- DESEED ASSOCIATION, 2 TO 50 PERCENT SLOPES
- DESEED-FREZNIK COMPLEX, 2 TO 15 PERCENT SLOPES
- DIAZ VERY COBBLY LOAM, 2 TO 15 PERCENT SLOPES
- FELCHER-ROCK OUTCROP COMPLEX, 30 TO 70 PERCENT SOUTH SLOPES
- FLOKE COMPLEX, 2 TO 15 PERCENT SLOPES
- MCCONNELL VERY GRAVELLY SANDY LOAM, 2 TO 15 PERCENT SLOPES
- OROVADA-MESMAN COMPLEX, 0 TO 5 PERCENT SLOPES
- PAIT VERY COBBLY LOAM, 5 TO 30 PERCENT SLOPES
- PLAYAS
- REESE VERY FINE SANDY LOAM, 0 TO 1 PERCENT SLOPES
- RIDDLERANCH-ROCK OUTCROP COMPLEX, 30 TO 70 PERCENT NORTH SLOPES
- ROCK OUTCROP-FELCHER ASSOCIATION, 30 TO 70 PERCENT SOUTH SLOPES



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Map 4



Cox Individual Allotment Vegetation

Legend

 Cox Individual Allotment

DOMVEG1

 No Data

 AGCR

 ARTR2-AGSP

 ARTR2-BRTE

 ARTR2-SIHY

 ARTR2-STTH2

 INCOMPLETE

 ROCKLAND



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