Environmental Assessment

Rawlins Field Office Cattle Trailing
DOI-BLM-WY-030-2012-0077-EA

September 2013

BLM

High Desert District – Rawlins Field Office

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
HIGH DESERT DISTRICT
RAWLINS FIELD OFFICE

EA Number: DOI-BLM-WY-030-2012-0077-EA

Proposed Action Title/Type: Rawlins Field Office Cattle Trailing

Location of Proposed Action: High Desert District Rawlins Field Office

File Name, No., and Location: Rawlins Field Office Cattle Trailing
Rawlins Field Office

Project Legal Location: Rawlins Field Office Boundary (See Map #1)

BLM Office: Rawlins Field Office (WY-030) **Lease/Serial/Case File No.:** 4130

Proposed Action Title/Type: Rawlins Field Office Cattle Trailing / Crossing Permits

Location of Proposed Action: Rawlins Field Office

Introduction

The Bureau of Land Management (BLM) Rawlins Field Office (RFO) administrative area is located in south-central and southeastern Wyoming and includes approximately 11.2 million acres of land in Albany, Carbon, Laramie, and eastern Sweetwater Counties (**Map 1** - RFO Boundary).

The Rawlins BLM Field Office boundary is defined by state lines, county lines, state highways, county roads, and existing grazing allotment boundary fencelines. The RFO includes lands managed and/or owned by the BLM, Bureau of Reclamation (BOR), Wyoming State Trust Lands (State), Department of Defense (DOD), Fish and Wildlife Service (Service), United States Forest Service (USFS), and privately owned deeded lands (**Map 2** - Land Ownership). The RFO consists of approximately 601 grazing allotments (**Map 3** – RFO Grazing Allotments), which include a total of 3,610,716 public acres (**Appendix 1** – RFO Grazing Allotments).

Grazing use of rangelands was first documented in south-central Wyoming by early explorers like Fremont and Stansbury, who in their journals described the presence and sign of bison. A number of bison kill sites adjacent to cliffs and rims along with scattered skulls and horns found across the landscape support the concept of plant community evolution with grazing in this area. Use by domestic livestock generally started in the 1870s with large cattle outfits, with sheep coming in shortly thereafter. Early trailing routes primarily ran north and south from the railroad so that livestock could be delivered to the line and shipped for consumption in other parts of the country. Trailing of sheep and cattle has occurred in this general area since that time, as well as by wide ranging bands of sheep that moved between Wyoming, Colorado, Utah, and Idaho. The implementation of the Taylor Grazing Act in 1934 led to base property requirements and established grazing allotments. Sheep were the dominant kind of livestock grazing at that time, with their associated seasonal movements between summer forest allotments and winter desert allotments. These became known as de facto Stock Driveways, and were never fenced separately from the allotments they crossed through. Over the last 40 years many livestock operations have converted from sheep to cattle and consequently sheep crossing use has declined by 80-90 percent. However, various cattle operations also trail their livestock in both historic locations and along new routes, as operations, land ownership patterns,

and grazing use areas have changed. The development of roads and the use of trucks for shipping livestock, and the consolidation of small homesteads into larger ranches, have also reduced the need for trailing over the last 70 years.

Grazing allotments within the RFO vary in size (i.e. acres), use dates, and livestock number and kind depending on the individual grazing operators issued lease(s)/permit(s). Not all lessees/permitees require livestock crossing permits; however, some operators still utilize cattle crossing permits to access their allotments in which they have assigned grazing preference. These may be physically separated from one another due to seasonal needs of the operation, or due to the time or source from when/where they were acquired.

Purpose and Need for Action

The purpose of the proposed action is to authorize cattle trailing by BLM grazing permittees/lessees and identify trailing routes and dates within the RFO that will be utilized when issuing cattle crossing permits. The need for the proposed action is to allow grazing permittees to cross public lands as they move livestock to and from their authorized grazing allotments identified in their grazing permits.

Trailing across public lands is currently required by 54 of the 338 (16%) RFO grazing permittees/lessees to deliver cattle to, or remove them from grazing allotments to which they are assigned grazing preference. Often, as a result of cost, weather, road conditions, landownership, and/or accessibility issues, cattle cannot be trucked or transported via trailer to individual grazing allotments. In these instances it becomes necessary for cattle to be trailed (i.e. physically walked) to individual allotments so as to make use of assigned preference. Trailing routes commonly occur on or along county, BLM, or two-track roads within the RFO, but due to public safety and/or the distance between assigned allotments, cattle trailing also occurs across roadless areas or outside of existing rights-of-way.

The majority of livestock trailing that occurs within the RFO takes place during spring and fall months as grazing allotments are being stocked and/or de-stocked with cattle. However, due to environmental conditions (i.e. drought, flooding, loss of livestock forage, or snow accumulations), allotment management plans, or rotational use patterns, it may be necessary for cattle trailing to occur during any time of the year.

Scoping and Issues

This project was entered into the RFO on-line NEPA Register on February 1, 2012. Public/external scoping was conducted through multiple grazing permittee/lessee letters to and from the BLM RFO, and via individual phone conversations. Every BLM RFO permittee/lessee was contacted in one form and/or the other.
Interdisciplinary review identified the following resources with issues of concern that will be addressed in this Environmental Assessment (EA):

Resource Issues Check List:

Resources	Issues Present/Identified	No Issues Identified	Resource Not Present
Air Quality	✓		
Cultural		✓	
Vegetation Management	✓		
Invasive/Nonnative Species	✓		
Visual Resource Management		✓	
Lands With Wilderness Characteristics (LWC)		✓	
Water Quality	✓		
Watershed and Soils	✓		

Management			
Wilderness and Wildlife Habitat Management	✓		
Forest Management		✓	
Fire and Fuels Management		✓	
Wildland Urban Interface		✓	
Livestock Management	✓		
Areas of Critical Environmental Concern (ACEC)			✓
Environmental Justice			✓
Floodplains			✓
Hazardous or Solid Waste			✓
Drinking/Ground Water Quality			✓
Land and Reality			✓
Minerals		✓	
Native American Religious Concerns		✓	
Prime or Unique Farm Land			✓
Paleontology/Geology Management			✓
Socioeconomics	✓		
Transportation and Access Management		✓	
Wild and Scenic Rivers		✓	
Wild Horse Management	✓		

Description of Proposed Action and Alternatives:

Proposed Action

The proposed action is to allow cattle trailing along the 388 miles of identified routes during established dates and time periods, so as to reduce resource impacts. Trailing routes would include roads (improved and unimproved), rights-of-way, disturbance corridors not under reclamation, cross-country routes, and historic livestock driveways. Crossing use requirements would be added to each individual crossing permit so as to identify issues, concerns, critical areas, and specific dates/times where and when trailing of cattle is not to occur.

An annual "Document of NEPA Adequacy (DNA)" and decision record would be produced for trailing routes and dates, identified during the scoping process, and evaluated in this document's proposed action. The DNA process would require an annual evaluation to address new circumstances (i.e. drought, wildlife stipulation, policy changes), which may result in impacts not addressed in this document. Should the DNA process identify any new and unmitigated impacts not evaluated in this proposed action, then additional NEPA process and decision record would be triggered (i.e. EIS, EA).

The BLM Manual H-4130-1 authorizing grazing use specifies the Terms and Conditions for crossing as follows:

> *The authorized officer prescribes the minimum distance livestock must travel per day and the maximum number of days allowable for the crossing use being authorized. The authorized*

officer also prescribes the route to be followed, specifying the point of origin, holdover areas and destination. Other terms and conditions may be added, including a statement that the authorization pertains only to public lands and/or other lands administered by the BLM.

General crossing use requirements are:

- Each herd of cattle is required to trail a minimum of 5 miles per day.
- Herd dogs may accompany trailing cattle, but dogs would be removed if requested by the permittee/lessee being crossed when other livestock are present.
- Permission must be received to cross private and state lands; the crossing use authorized in this document only applies to public lands.
- Consultation with permittees/lessees being crossed would evaluate water availability, and during dry periods whether temporary water hauling is needed by the crossing permittee.
- All permittees/lessees of allotments being crossed and the RFO Range Staff will be notified prior (within 2-3 days) of crossing, with approximate dates of crossing, and on-the-ground coordination, if necessary (particularly if other livestock are present or if water availability along the trail is limited). The RFO Range Staff would assist in the notification of other permittees, if requested.
- The RFO Range Staff would be notified of the actual date crossing use would be started and completed (if different from above), and a crossing use authorization/bill would be created.
- Crossing use would follow identified routes on the attached map, with up to two hundred and fifty feet (250') deviation on either side of the designated route (total trail width of five hundred feet).
- Water use would come from natural water sources, such as snow, streams, rivers, standing water, and reservoirs; or from approved water developments, such as water wells, spring developments, or pipelines/trough providing water on public lands. Temporary water hauling to portable tanks could also occur. During drought years, additional consultation may be required to ensure assigned permittee/lessee has sufficient water to support crossing cattle use.
- Crossing use is generally planned with weather forecasts in mind, however, any deviations required outside the five hundred foot (500') trail width en route due to weather, poisonous plants, or other unforeseen problems would require consultation with the BLM and permittees whose allotments are being crossed.
- No camping within buffers around Greater Sage-Grouse and Columbian Sharp-Tailed grouse leks and raptor nest sites during the spring through early summer crossing use period. These locations would be identified by BLM staff with the permittee prior to authorization of crossing use, which may lead to modification of routes to meet this requirement. Camps would be at least 0.6 miles (in core habitat) or 0.25 miles (outside core habitat) from Greater Sage-Grouse and 0.25 miles from Colombian Sharp-Tailed grouse leks during March 1 to May 20 to reduce the possibility of disturbance to strutting grouse. Trailed cattle would avoid leks between the hours of 6 p.m. and 9 a.m. (March 1 to May 20).
- Permittees of allotments (or pastures) and the RFO Range Staff would be notified if cattle are left behind, such as those starting to drop calves, before reaching their destination. These cattle would be removed within ten days.
- Cattle being trailed would avoid recent reclamation where possible, such as staying on the right side of a road if a newly reclaimed pipeline follows the left side of the same road.

Scoping comments from RFO permittees/lessees, local conservation districts, internal review, and BLM RFO Range Staff identified the following trailing/crossing routes and dates that will be utilized under the "Proposed Action" alternative. Scoping identified 116 cattle trailing routes and 4 cattle overnighting areas on public land (some of which overlap) totaling 388 miles. Applying the allowable 500 foot trail corridor buffer to the 388 miles, trailing would occur on a maximum of 23,224 BLM acres (.064%), within the RFO boundary.

MAPS 4-8 Rawlins Field Office Identified Trailing Routes

The following tables (Table #1 and Table #2) show trail dates and livestock numbers identified by RFO permittees/lessees during the scoping process.

Table: #1 – Identified Trailing that **Does Not Overnight** Cattle on BLM Land

Operator Name	Numbers	Livestock Kind	Trail Date(s)*
3 Forks Ranch	250-700	Cow Calf Pairs	October / December
3 Forks Ranch	1800-2000	Yearlings	May
Alden/Karen Condict	50	Bulls	May / June
Alden/Karen Condict	250	Cow Calf Pairs	March / December
Alden/Karen Condict	350	Head	May
Alden/Karen Condict	50	Head	June
Berger Ranches	350	Pair	June
Berger Ranches	900	Pair	October
Berger Ranches	300	Pair	May/June/Oct/Jan/Feb
Berger Ranches	175	Pair	May-June
Brow	180	Head	July / September
Bruce Thayer	385	Head	March-April / Oct-Nov
Bruce Thayer	250-400	Head	March-April / Oct-Dec
Bruce Thayer	250-400	Head	May-June / Oct-Nov
Bruce Thayer	250-400	Head	July-Aug / Oct-Nov
Bruce Thayer	250-400	Head	Oct-Nov
Bruce Thayer	385	Head	March-April / Oct-Nov
Bucking "S" Ranch LLC.	160-200	Head	June / July
Bummer Ranch	300-500	Pairs	May-June / Oct-Nov
Darlene Herman	100	Cow Calf Pair	Aug-Sept
Darlene Herman	300	Head	March-April
Darlene Herman	90	Cow Calf Pair	Aug-Sept
Darlene Herman	60	Cow Calf Pair	Sept-Oct
Dexter Peak LTD. LLC	800	Head	July –Aug
Dexter Peak LTD. LLC	800	Head	September
Dick Barkhurst	120	Pair	May / Oct-Nov
George Evans	250	Head	April-May / October
Giesweidth / Spenrath	350	Head	July
Giesweidth / Spenrath	350	Head	September
Gittaway Ranch Too. LLC	360-650	Head	May / November
H.B. Lee	300-400	Head	October-November
Hay Ranch LP	200	Head	September
Hunter Livestock	900	Head	May-June / Aug-Sept
Hunter Livestock	400	Head	May / Aug
Hunter Livestock	650	Head	May / Aug
James Atkinson	375	Head	June
James Atkinson	375	Head	Aug / Jan
James Atkinson	75	Heifers	August
Jean George – Harkins Lease	300	Head	May/June/Sept/Oct
Jim Miller	100	Pair	July / Sept / Nov
John Raftopoulos	350-800	Head	April-June / Sept-Oct
Jolley Livestock	400-450	Head	April / May
Kathryn Sanger – Jack Creek	100-200	Head	June-July
Kathryn Sanger – Jack Creek	500-600	Head	September-October
Kelley Land and Cattle	700	Cow Calf Pair	May-June / Sept-Oct
Kelley Land and Cattle	700	Cow Calf Pair	October
Kelley Land and Cattle	700	Cow Calf Pair	March-June / Oct-Jan
Kelley Land and Cattle	700	Cow Calf Pair	Dec-Jan / March-May / Oct-Nov
Kelley Land and Cattle	1000 / 500	Yearlings / Pair	May / Oct-Nov

Kerbs 4 Bar Ranch	800	Pair	Oct-Nov / Nov-Dec
Kerbs 4 Bar Ranch	120	Heifers	October-January
KESA	200-300	Head	Use Corrals Fall Months
Mark Byer	350-400	Head	October
Marty Annis	250	Pair	JulyMay / Oct-Nov
Matt Weber	230-350	Cow/Calf Pairs	June-July / Aug / Sept
Mike and Joyce Evans	100	Cow Calf Pair	June / July / Oct / Nov
Monte/Cheryl Monroe	200	Cow Calf Pairs	Aug / Sept-Oct
Moonshine Beef Grazing Assoc. LLC.	200-250	Head	September-October
Needmore Land & Cattle	320	Pairs	May / Nov
Overland Trail Cattle Co.	1000-2000	Head	May-April / Oct-Nov
Pat Sheehan	300-400	Head	June-July / Oct-Nov
Pathfinder Buzzard Ranch	800	Pair	April
Purple Sage – Bob Davis	100	Head	April-May
Purple Sage – Bob Davis	200-300	Head	September-October
Randy Montgomery	200-300	Head	September-October
Randy Montgomery	200-300	Head	April-May / Nov-Dec
Robert (Bob) Heward	80	Head	October
Robert Cardwell	450 / 1400	Pairs / Yearlings	June / Sept-October
Robert Cardwell	200 / 400	Pairs / Yearlings	June / Sept-October
Robert Heward	260	Head	April-May / Nov-Dec
Rodewald Grazing Assoc., LLC	700	Yearlings/Head	Near June 1; Mid Aug
Ryker and Carrie Hyche	150-200	Head	June – July / Oct
Shirley Basin Grazing Assoc., LLC	350	Head	June / Oct-Nov
Silver Spur Operating Co.	40	Head	June / Sept
Silver Spur Operating Co.	220	Head	May – June
Silver Spur Operating Co.	100	Head	September
Silver Spur Operating Co.	450	Cow Calf Pair	October
Silver Spur Operating Co.	200	Head	June / October
Silver Spur Operating Co.	50	Head	October
Steve Adams	200-300	Head	Oct-Nov / March
TA Ranches	1000	Pair	May-June / Sept-Oct
TA Ranches	350/1700	Heifers/Pair	Nov-Dec / April-June / Feb-March
Three Mill Iron Ranch	350-450	Head	April-May / Sept-Oct
Vale Ranch	200	Head	June / October
Vale Ranch	150	Yearlings	May / Sept
Vale Ranch	200	Working Pairs	September
Vale Ranch	150	Heifers	July / October
Vale Ranch	200	Head	June/July/Aug/Sept/Oct

* Trail dates are affected by numerous factors (i.e. weather, shipping schedule, feed, turnout dates)

Table: #2 - Identified Trailing that **Does Overnight** Cattle on BLM Land

Operator Name	Numbers on Trail	Livestock Kind	Trail Date(s)
Jerry Kennady	200-225	Head	August / November
Ray Weber – Kirk Shiner	650	Head	April / December
Stratton Sheep - Charlie Jaure	400	Head	June / Oct-Nov
Pat Sheehan	300-400	Head	June-July/Oct-Nov

Cattle trailing use will be billed through the crossing permit authorization process, with AUMs billed through "temporary non-renewable use" on an annual basis. Billing for crossing use would be assigned to the allotment being crossed, whether it is for two hours or two days, or along roads or cross-country. All

cattle crossing use would be reviewed annually by the BLM to ensure that no BLM allotment would be over utilized above the leased/permitted active preference. Crossing use would not result in additional preference being added to an existing permit, nor would it result in the loss of preference actively assigned to existing permit/lease holders. However, several of the permittees with overnight trailing have fenced out areas for trailing use and all of them have the capability to use private or state land to overnight on, if the need arises. In areas with identified historical "Stock Driveways," (Map 9 - Historic Stock Driveways) AUMs have been withheld "historically" for the specific purpose of trailing livestock. However, the majority of the historical livestock driveways have been absorbed into active grazing allotment preference as a result of "Range Line Agreements", new land ownership patterns, and changes in allotment boundaries/assignments over the course of the last 75 years.

No Action Alternative

Under the No Action Alternative, cattle trailing, via "crossing permits" would not be allowed across other permittees/lessees allotments on BLM administered public land within the RFO. Under this alternative, cattle would be required to be loaded onto trucks/trailers and moved from one BLM RFO allotment to the next. A number of roads would need to be upgraded and additional corrals and shipping facilities would need to be constructed.

Alternatives Considered and Eliminated from Further Analysis

Alternate Trail Routes and Dates Alternative

This alternative would require the use of a combination of alternate dates and routes other than those utilized in previous years' "crossing permits" and/or those identified during the scoping process. However, due to the need for livestock operators to trail based on environmental factors (i.e. drought, wildfire, or snow accumulation) it may be necessary for cattle to be trailed during any time of the year.

The dates identified during the scoping process represent the dates utilized, and/or those most likely to be utilized by operators as a result of previously witnessed/recorded environmental conditions/events, permit/lease use dates, allotment/ranch management plans, grazing rotation patterns, livestock breeding schedules, shipping dates, and/or a combination of the above. The identified trailing routes represent those that have been used in the past, or will need to be used in the future, based on present day information during the scoping process. The identified routes, under the proposed action, represent the most efficient line of travel for livestock based on current disturbance, topography, roads, gates, water crossings, water sources, fence lines, rights-of-way, easements, camping locations, land ownership patterns, resource issues (i.e. grouse leks, raptor nests, reclamation), assigned allotment locations, livestock mixing issues, access, and past experiences.

Based on the actual use of the trails and dates identified during the scoping process, it would be difficult for most operators to use alternate trail routes and dates, other than those identified, which are based on past/present/future needs and existing resource issues. Thus, this alternative would not meet the purpose and need of the operators and will be removed from any further detailed analysis.

No Cross Country Trailing Alternative

Under the "No Cross Country Trailing Alternative" cattle trailing would only occur along roads (improved and unimproved) and along areas with existing and/or previous disturbance. Cattle trailing would not be allowed in areas outside of existing rights-of-way or across BLM lands with no previous disturbance (i.e. two track roads, improved roads, and pipelines). This would increase the distance and duration of crossing use as compared to the proposed action. Over the last twenty years there have been tremendous increases in industry and recreational traffic on state, county, and BLM improved roads, making it much more difficult to use these historic routes for crossing. Due to potential safety concerns this alternative would present in areas with industry traffic (i.e. vehicle strikes, increased animal stress, and the extreme difficulty

of herding/moving animals in close proximity to vehicle traffic), this alternative is removed from further analysis.

Conformance with Land Use Plans, Laws, and Regulations

42 U.S.C. National Environmental Policy Act of 1969, as amended

43 CFR 4130.6–3 Crossing permits.

> *"A crossing permit may be issued by the authorized officer to any applicant showing a need to cross the public land or other land under Bureau of Land Management control, or both, with livestock for proper and lawful purposes. A temporary use authorization for trailing livestock shall contain terms and conditions for the temporary grazing use that will occur as deemed necessary by the authorized officer to achieve the objectives of this part."*

Interim Management Guidelines for the Greater Sage-grouse and Sagebrush-Steppe Ecosystems for BLM Administered Lands in Wyoming, 2000

Federal Land Policy and Management Act, 1976

Wyoming Standards for Healthy Rangelands

This proposal is subject to the following applicable land use plan (LUP): Rawlins Resource Management Plan (RMP) Approved: December 24, 2008

This plan has been reviewed to determine if the proposed action conforms to the land use plan as required by 43 CFR 1610.5-3. The proposed action conforms to multiple Management Goals, Objectives, and Actions starting on Page 2-10 of the Record of Decision and Approved RMP.

2.3.6 Livestock Grazing Section – Management Goal

"Maintain and/or enhance livestock grazing opportunities and rangeland health."

Management Objective

"Mitigate direct, indirect, and cumulative livestock forage losses and impacts to livestock grazing (including impacts on livestock grazing operational capabilities and production performance) where opportunities exist." (Livestock grazing operational capabilities is defined as: The space, forage, and water needed for critical elements of livestock operations, such as lambing and calving grounds, trail routes, and roundup and shipping facilities. These sites may vary based on the size, type, location, and needs of individual livestock operations.)

2.3.8 Off-Highway Vehicles – Management Actions

"*Off-road motor vehicle use is allowed for necessary tasks except in WSA's and Specific SD/MAs*"

Necessary Tasks (as defined in the Rawlins RMP): "*Activity conducted as part of an authorized use of public lands requiring the use of a motorized vehicle. Examples include surveying and staking for Notice of Intent (NOIs) to conduct geophysical activities, APDs, and ROWs; repairing range improvements; managing livestock; and mineral activities where surface disturbance does not total more than 5 acres as described in the 5- acre exemption under 43 CFR 3809 regulations.*"

Affected Environment

The Code of Federal Regulations (CFRs) contains the fundamental regulations and direction that guides the Bureau of Land Management (BLM) in its administration of public rangelands. 43 CFR 4180.1 details four fundamentals of rangeland health. They are:

- Watersheds are in or are making progress toward properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

- Ecological processes including the hydrologic cycle, nutrient cycle, and energy flow are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.

- Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving established BLM management objectives, such as meeting wildlife needs.

- Habitats are, or are making significant progress toward being, restored or maintained for federal threatened and endangered species, federal proposed, federal candidate and other special status species.

The Six Wyoming Standards for Healthy Rangelands are:

Standard 1: Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.

Standard 2: Riparian and wetland vegetation has structural, age, and species diversity characteristics of the stage of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide for ground water recharge.

Standard 3: Upland vegetation on each ecological site consist of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.

Standard 4: Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.

Standard 5: Water Quality meets state standards.

Standard 6: Air Quality meets state standards.

The Affected Environment is described using the Standards for Rangeland Health as follows:

Soils /Watershed Health – Standard #1

The RFO encompasses portions of three hydrologic basins, which include the Upper Colorado River, Great Divide Basin, and North Platte River. Since Wyoming was once covered by an inland sea, series of depositional events created the soils present today that are dominated by sandstones and shales with varying amounts of salts. As precipitation increases at higher elevations, salts are leached to deeper horizons, and organic matter increases, leading to greater soil development. Over time this has created a natural mosaic of sand, clay, and loamy textures across the landscape. Plant cover on these soils depends

on the texture, development, precipitation zone, and other influences upon each site. In general, plant cover consists of native species of grasses, forbs, shrubs, and trees; and is adequate to protect and hold existing soils in place if not disturbed. Microbiotic features are primarily located under shrubs and trees, with clubmoss being the most commonly observed species, in addition to vagrant lichen in more open rangelands. However, there is evidence that grazing practices (in particular the conversion of grazing use from sheep to cattle), high wild horse and big game populations, wildfire suppression, energy development, road construction, road and off-road vehicle use, and plant succession have altered plant cover and litter on some sites, which has led to increased soil erosion. These actions and natural forces have changed the general classes of plant cover to higher amounts of shrub or tree canopy and reduced herbaceous cover, leading to increased susceptibility of soil erosion. In addition, the concentration of livestock use and duration of use next to natural water sources has altered plant communities in these locations more than anywhere else. These alterations include increased bare ground, sheared-off stream banks, reduction or loss of woody shrubs and trees that provide deep-root holding capability and large debris, and conversion to grazing tolerant, but shallow-rooted grasses, all of which lead to reduced stability along waterways and increased potential for soil erosion. The introduction of grazing systems in the 1960s and expansion of those efforts in succeeding years have reversed many of the observed impacts described above, particularly in terms of reduced bare ground, greater plant cover and litter, and more stable waterways. However, symptoms of historic grazing use such as pedestals, dominance by species with lower soil holding capacity, and wider than normal channel morphology will take many years to fully recover.

Riparian/Wetland Health – Standard #2

Vegetation in these areas consist of multiple riparian-wetland habitat types, with grassland riparian and willow-riparian types being the most common, and aspen and cottonwood riparian types being the least common. Common herbaceous plant species include Nebraska and beaked sedge, tufted hairgrass, Kentucky bluegrass, redtop, meadow foxtail, Baltic rush, alkali sacaton, basin wildrye, and less common sedges, rushes, grasses and forbs. At some sites there may be a woody component of willows, cottonwood, waterbirch, rose, currant, dogwood, chokecherry and aspen. Plant species composition and diversity is important for riparian wetland health. Riparian vegetation helps to capture sediments and associated materials, thus enhancing the nutrient cycle by capturing and utilizing nutrients that would otherwise move through the system unused. Cattle grazing is one of the principle uses of public rangelands, and may be the single most influencing factor to affect riparian-wetland habitat types. Historic grazing management practices often resulted in the long duration of livestock use (spring through fall), where livestock concentrated in riparian habitats due to water availability and more palatable forage. This led to shifts in species composition, cover, and stability as species such as sedges, bunchgrasses, shrubs, and willows decreased; whereas, grazing tolerant or undesirable species, such as, Kentucky bluegrass, redtop, mat muhly, Baltic rush, and annual/early successional forbs increased. With the change in emphasis during the 1980s from riparian sacrifice areas to important management areas, many of these habitats have improved by moving towards or reaching Proper Functioning Condition (PFC). However, recovery of diverse woody plant populations will continue to take a long time to attain, and will continue to require site-specific management of livestock grazing. In addition, some riparian areas have additional grazing impacts from wild horses and/or wildlife and will also require site specific management

Upland Vegetation – Standard #3

Upland vegetation on each site consists of plant communities appropriate to the site, which are resilient, diverse, and able to recover from natural and human disturbance. Due to the local soils and climate, vegetative communities in the RFO are dominated by sagebrush, saltbush, and greasewood, along with various grasses and forbs. As precipitation increases into the foothills and mountains, pockets of juniper, aspen, and mountain shrubs also occur. In the short grass prairie of eastern Wyoming, native grasses become the dominant vegetative component. Common plant species frequenting upland sites include a dozen types of sagebrush, Douglas and rubber rabbitbrush, winterfat, horsebrush, black greasewood, Nuttall's saltbush, shadscale, snowberry, serviceberry, bitterbrush, mountain mahogany, sumac, creeping juniper, buffaloberry, Utah juniper, aspen, limber pine, lodgepole pine, blue spruce, Douglas fir, subalpine fir, wheatgrasses, bluegrasses, ricegrass, needlegrasses, wildrye, squirreltail, three-awn, blue grama, threadleaf sedge, and a wide variety of mostly native forbs. These many plant species help to support

wildlife and livestock by providing thermal and hiding cover, and most importantly a resource for dietary intake. Small infestations of noxious weed species have been identified; primarily knapweeds, leafy spurge, tamarisk, whitetop, and musk thistle. Most of these species were introduced along roadsides are treated promptly to control their proliferation. Sheep bedding grounds, drill pad sites, and roads are where invasive, non-native annual species like halogeton and Russian thistle are commonly noticed. Cheatgrass is present in many locations but does not appear to be spreading rapidly. Sites which are warmer (rock piles and south slopes) and have disturbance (old lambing grounds, runoff from rocks, old pads and roads) are where cheatgrass is most often observed. Grazing does affect upland vegetation, but in more subtle ways than the direct impacts of road construction or oil and gas field development. For instance, historic grazing through the spring and summer (entire growing season) has reduced the abundance of some bunchgrass species, increased the amounts of bare ground, and increased less desirable species, such as little bluegrass, rhizomatous wheatgrasses, prickly-pear cactus, and annual forbs.

Wildlife/Threatened & Endangered Species – Standard #4

Wildlife is both abundant and diverse across the RFO. In general, wildlife habitat varies from yearlong to crucial winter range for the common wildlife species of elk, antelope, and mule deer; and seasonal habitat for raptors, songbirds, waterfowl, and other migrating species. Common resident wildlife also includes coyote, fox, badger, rabbits, prairie dogs, ground squirrels, Greater Sage-Grouse, leopard frogs, horned lizards, and rattlesnakes. In specific areas there are also bighorn sheep, white-tail deer, moose, Columbian and plains sharp-tailed grouse, Wyoming toad, and black-footed ferrets.

BLM Wyoming State Sensitive Species

Many wildlife and plant species populations are declining, although there may be many reasons for this, one of the causes for this decline is loss of habitat. The objective of the sensitive species designation is to ensure consideration of the overall welfare of these species when undertaking actions on public lands, and not to contribute to the need to list the species under the provisions of the Endangered Species Act (ESA). The lack of demographic, distribution, and habitat requirement information compounds the difficulty of taking management actions for many species. While there are specific actions identified at this time, this project is designed to continue improvement of all habitats within the project area.

The BLM's management mandate is less regulatory, and more administrative and generic for sensitive species. It is the intent of the sensitive species policy to emphasize the inventory, planning consideration, management implementation, monitoring, and information exchange for the sensitive species on the list in light of the statutory and administrative priorities mentioned above. In most instances, the following types of actions/activities would be appropriate and expected for sensitive species management: Inventory, Land Use Planning, Conservation Strategies, NEPA Analysis, Best Management Practices, Monitoring, and Information Interchange.

A biological evaluation identified the following BLM Sensitive Species as having potential habitat, or as known to occur, within the areas of identified trailing routes:

Species Common Name	Scientific Name	Habitat
MAMMALS (8)		
White-tailed prairie dog	*Cynomys leucurus*	Basin-prairie shrub, grasslands
Long-eared myotis	*Myotis evotis*	Conifer & deciduous forests, caves and mines
Fringed myotis	*Myotis thysanodes*	Conifer forests, woodland chaparral, caves and mines

Spotted bat	*Euderma maculatum*	Forests, woodlands, caves and mines, rock crevices, man-made structures
Townsend's big-eared bat	*Corynorhinus townsendii*	Forests, basin prairie shrub (rock outcroppings within), caves and mines
Pygmy rabbit	*Brachylagus idahoensis*	Basin prairie and riparian shrub, tall sagebrush in dense patches, sandy and loose soils
Wyoming pocket gopher	*Thomomys clusius*	Side-hills and ridge-tops, cushion plant communities in otherwise sagebrush dominated habitat
Swift fox	*Vulpes velox*	Grasslands
BIRDS (10)		
Columbia sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	Basin-prairie shrub
Mountain plover	*Charadrius montanus*	Short-grass & mixed-grass prairie, openings in shrub ecosystems, prairie dog towns
Bald eagle	*Haliaeetus leucocephalus*	Primarily along rivers, streams, lakes and waterways
Burrowing owl	*Athene cunicularia*	Grasslands, basin-prairie shrub
Ferruginous hawk	*Buteo regalis*	Basin-prairie shrub, grassland, rock outcrops
Loggerhead shrike	*Lanius ludovicianus*	Basin prairie/mountain foothill shrub
Sage thrasher	*Oreoscoptes montanus*	Basin prairie shrub, mountain foothill shrubs
Brewer's sparrow	*Spizella breweri*	Basin prairie shrub
Sage sparrow	*Amphispiza belli*	Basin prairie shrub, mountain foothill shrubs
Long-billed curlew	*Numenius americanus*	Grasslands, plains, foothills, wet meadows
AMPHIBIANS (3) and REPTILES (0)		
Northern leopard frog	*Rana pipiens*	Beaver ponds, permanent water in plains and foothills
Great Basin spadefoot	*Spea intermontana*	Spring seeps, permanent and temporary waters
Western Boreal Toad (Northern Rocky Mountain population)	*Bufo boreas boreas*	Pond margins, wet meadows, riparian areas
PLANTS (6)		
Laramie columbine	*Aquilegia laramiensis*	Crevices of granite boulders & cliffs 6,400-8,000 feet
Cedar Rim thistle	*Cirsium aridum*	Barren, chalky hills, gravelly slopes, & fine textured, sandy-shaley draws at 6,700-7,200 feet in elevation
Gibben's beardtongue	*Penstemon gibbensii*	Sparsely vegetated shale or sandy-clay slopes at 5,500-7,700 feet in elevation
Persistent sepal yellowcress	*Rorippa calycina*	Riverbanks & shorelines usually on sandy soils near high H2O line, reservoirs & playas at 4,300-6,800 feet in elevation
Laramie false sagebrush	*Sphaeromeria simplex*	Cushion plant communities on rocky limestone ridges & gentle slopes at 7,500-8,600 feet in elevation
Limber pine	*Pinus flexilis*	Timberline and at lover elevation with sagebrush. Associated species are Rocky

		Mountain Douglas-fir, subalpine fir, Rocky Mountain juniper, Mountain Mahogany, and common juniper
FISH (4)		
Colorado River cutthroat	*Oncorhynchus clarkii pleuriticus*	Perennial stream channels in the Muddy Creek/Little Snake River tributaries
Roundtail chub	*Gila robusta*	Perennial and/or discontinuous stream channels in Muddy Creek/Little Snake River
Flannelmouth sucker	*Catostomus latipinnis*	Perennial and/or discontinuous stream channels in Muddy Creek/Little Snake River
Bluehead sucker	*Catostomus discobolus*	Perennial and/or discontinuous stream channels in Muddy Creek/Little Snake River

Endangered, Threatened, Candidate and Proposed Species:

There are 18 Endangered (E), Threatened (T), Proposed (P) and/or Candidate (C) species that may be found, or have the potential to be found, within the Rawlins Field Office area. Informal consultation and conferencing with the U.S. Fish and Wildlife Service (Service) in Cheyenne, Wyoming, was conducted.

Of these 18, five are located within, or have potential habitat located within, the identified trailing routes, therefore, there will be a "May Affect, Not Likely to Adversely Affect" to these species as a result of implementing the proposed project.

Species Common Name	Scientific Name	Habitat
MAMMALS (2)		
Black-footed ferret (E)	*Mustela nigripes*	Prairie dog colonies with black-tailed prairie dog complex >80 acres and white-tailed prairie dog complex >200 acres
Black-footed ferret (P) Experimental/Non-essentail	*Mustela nigripes*	Shirley Basin
Preble's meadow jumping mouse (T)	*Zapus hudsonius preblei*	Lush riparian vegetation or herbaceous understories of wooded areas near water
BIRDS (1)		
Greater Sage-Grouse (C)	*Centrocercus urophasianus*	Basin-prairie shrub, sagebrush communities
AMPHIBIANS (0) and REPTILES (0)		
PLANTS (2)		
Ute ladies'-tresses (T)	*Spiranthes diluvialis*	Endemic to moist soils in mesic or wet meadows near springs, lakes, seeps, and riparian areas within 100 year flood plain of perennial streams ranging from 4,300-7,00 feet in elevation
Colorado butterfly plant (T) Colorado butterfly plant Critical Habitat	*Gaura neomexicana coloradensis*	Endemic to moist soils in mesic or wet meadows of floodplain areas in Laramie County, WY Designated for Colorado butterfly plant in specific wet meadows and riparian areas within

		Laramie and Platte Counties of Wyoming

Fisheries

Fish habitats include perennial and intermittent streams, springs, and flatwater (lakes and reservoirs) that support fish through at least a portion of the year. Condition of the fish habitats is related to hydrologic conditions of the upland and riparian areas associated with or contributing to a specific stream or water body, and to stream channel characteristics. Aquatic habitat quality varies by location and orientation to geographic landforms and vegetation. Riparian vegetation moderates water temperatures, adds structure to the banks to reduce erosion, provides instream habitat for fish, and provides organic material for aquatic macroinvertebrates. Vegetated flood plains dissipate stream energy, store water for later release, provide areas of infiltration for ground water, support the hyporheic zone of the river, and provide rearing areas for juvenile fish. The quality of the physical aquatic habitat is refined further by water quality. Specifically, water temperature, turbidity, and dissolved oxygen determine the amount of habitat that is usable by different fish species. Public lands within the Rawlins Field Office boundry provide habitat for eight fish families. Wyoming BLM has classified five species as sensitive: the Colorado River cutthroat trout, bluehead sucker, flannelmouth sucker, roundtail chub, and hornyhead chub. In addition, four endangered fish species can be found downstream of the Rawlins Field Office within the Colorado River basin (razorback sucker, humpback chub, bonytail chub, and Colorado pikeminnow), and one endangered fish species, pallid sturgeon, can be found downstream of the Rawlins Field Office boundary in the Platte River basin. Three drainages occur within the Rawlins Field Office boundary: the Colorado River watershed in the western portion, the North Platte River watershed in the eastern portion, and the Great Divide Basin in the northwest. Several introduced trout species are widely distributed in the field office, occupying the vast majority of suitable coldwater habitats. For example, brook trout can be found in most mid-high elevation coldwater streams within the Rawlins Field Office Boundary.

Weeds

Noxious and invasive weeds are identified as a major threat to native ecosystems and multiple-use. They contribute to the loss of rangeland productivity, increased soil erosion, reduced native species diversity, and loss of wildlife habitat and, in some instances, are hazardous to human and animal health and welfare (Federal Noxious Weed Act, Public Law 93-629). Waterways, roads, and animals are the principal vectors for expansion of noxious and invasive weed species. Weeds are a component evaluated during Standards for Healthy Rangelands assessments. Noxious and invasive weeds cannot be adequately controlled unless federal, state, county, and private interests work together.

Water Quality – Standard #5

Water from springs, seeps, artesian wells, drilled wells, streams, rivers, lakes, and reservoirs differ in their quantity and quality of water produced. Water sources vary in water availability, from rivers and reservoirs, which flow or hold water year round, to small perennial, intermittent, and annual streams that may or may not flow during dry summer months. Flows from springs, seeps, and wells vary from several gallons/minute to just a wet spot a few feet in diameter. In the Great Divide Basin and drier areas of the RFO, this water will run from a few feet to a 1/4 mile before drying up, whereas at higher elevations water flows may augment perennial waters. Water quality at perennial sources is generally good in terms of supporting use by wildlife, livestock, wild horses, and riparian habitat. However, around these sources water quantity and quality has historically been highly impaired due to animal trampling and defecation. Long term livestock and wild horse use along intermittent and perennial channels also negatively affects water quality. Loss of bank cover or the conversion to plant species with lower soil holding capability has led to wider, shallower channels with higher water temperatures and turbidity, lower oxygen levels, and impaired channel function. As previously mentioned, improved livestock grazing management practices has addressed many of these negative impacts and improvements in water quality have been noted. Several sections of perennial and intermittent streams have been delisted by the Wyoming Department of Environmental Quality (WYDEQ). The current Wyoming Water Quality Assessment and Impaired Waters List (WYDEQ, 2010) is a comprehensive list of impaired water bodies in the state and includes several

listed in the RFO. The only area currently listed that could be affected by cattle trailing is that portion of Muddy Creek (north of Baggs) that lies west of Wyoming Highway 789.

Air Quality – Standard #6

Air quality within the RFO is generally very good. The persistent wind common to Wyoming tends to dissipate emissions from industrial developments, highways, and man-made and natural fires, but also tends to reduce visibility by adding dust to the air. According to a letter received from the WYDEQ, there are no air quality criteria pollutant non-attainment areas, for either state or federal standards, within the boundaries of the RFO.

Recreation, Visual Resources

Recreation opportunities across the field office cover a wide range of interests. Most field office areas are accessible by vehicle. During late summer and fall months, a multitude of trucks, trailers, UTVs and ATVs can be observed as recreational hunting, fishing, and camping occurs. This is in sharp contrast to the rest of the year when people can enjoy the solitude, scenic beauty, and a variety of non-motorized and motorized activities including hiking, rock hounding, bird watching, horseback riding, biking, sightseeing, and antler collection among others.

Viewsheds within the RFO are ranked into four visual resource management classes; Class I areas include wilderness study areas and wild and scenic rivers, where surface disturbing activities may be restricted and/or require extensive mitigation. Class II visual resource management areas represent locations where landscape modifications should blend with surrounding environmental characteristics so as not to disturb visual quality (i.e. forest boundaries, high recreation use areas, and historical sites). Areas with existing and/or evident modification to landscape characteristics would be categorized as Class III or IV visual resource management areas, depending on the original composition and characteristics of the landscape (i.e. industrial areas, mineral activity, transportation routes, and disturbed areas). The identified trailing routes fall into Classes II, III, and IV.

The amount of noise common in the RFO is dependent on location within the management area. Noise levels vary from low levels generated entirely by wind to road noise from vehicles to high levels generated by industrial equipment.

Lands with Wilderness Characteristics

Under recent direction, Executive Order – 3310, <u>the identified trailing routes</u> were evaluated for Land with Wilderness Characteristics (LWC). The evaluation process included an ID team approach with the project area being evaluated on size, naturalness, solitude or a primitive and unconfined type of recreation, and supplemental values (documented on Form 2 in accordance with BLM–Manual 6301–Wilderness Characteristics Inventory).

The Federal Land Policy and Management Act (FLPMA) section 201(a) and 603 directed the BLM to manage the public lands and their resources under principles of multiple use and sustained yield. Wilderness is one of the multiple use values.

Section 2(c) of the Wilderness Act of 1964 requires that in order to be considered to have wilderness characteristics, an area must meet all of the following criteria:

(1) "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;" This is commonly referred to as naturalness.

(2) "has outstanding opportunities for solitude or a primitive and unconfined type of recreation;"

(3) "has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition;"

The Wilderness Act further states, areas with wilderness characteristics "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." These are commonly referred to as supplemental values and are not required to be present.

Cultural Resources

A variety of cultural resources are present throughout the RFO including properties listed and eligible for the National Register of Historic Places. Site types include, but are not limited to, historic sites, such as, structures and trails in addition to prehistoric sites. For a more detailed description of site types see the Rawlins Resource Management Plan section 3.3, Cultural Resources.

Grazing Resources

The RFO administers approximately 601 grazing allotments on 3,610,716 plus acres of public land (see **Appendix 1**- RFO Grazing Allotments). Grazing allotments vary based upon livestock kind (i.e. cattle, sheep, horses, goats, and alpacas) as well as use (i.e. season long, durational and rotational use patterns). Typically, allotments are grazed by livestock during spring, summer, and/or fall months with permittees/lessees shipping livestock to feedlots or trailering/trailing them to private pastures in the fall. The largest portion of winter use within the RFO comes from domestic sheep operations; although total permitted sheep use is a small portion of the total preference within the RFO. Grazing allotments are stocked with a number of different livestock combinations, but the majority of livestock use (92%) within the field office consists of yearling cattle and/or cow calf pair operations.

Wild Horses

There are four Wild Horse Herd Management Areas (HMA) located within the RFO; Lost Creek, Stewart Creek, Antelope Hills, and Adobe Town (**see Map 10 – Wild Horse Herd Management Areas**). The four HMAs are all currently at or near appropriate management level (AML) as a result of recent horse gathering operations. Adobe Town has a current estimated wild horse population of 730 horses, and was last gathered during October/November 2010. The Adobe Town HMA has an AML of 610-800. The Antelope Hills, Stewart Creek and Lost Creek HMAs were gathered in October and November of 2011. The current estimated population for Antelope Hills is 76 horses with an AML of 60 to 82. The current estimated population for Stewart Creek is 124 horses with an AML of 125 to 175. The current estimated population for Lost Creek is 77 with an AML of 60 to 82. Wild horses have existed within the boundaries of the RFO since prior to the Taylor Grazing Act -1934. It was at that time that individual grazing districts and allotment boundaries were formed, and wild horses have continued to be a part of the natural landscape on portions of the BLM RFO lands. Wild horse herds have developed and adapted to exist in conjunction with domestic livestock use within the RFO, and their numbers continue to demonstrate their ability to thrive under present day disturbances and current environmental conditions.

Global Warming & Carbon Sequestration

Global warming is impacted by the release of greenhouse gasses, including atmospheric carbon dioxide and methane, into the earth's atmosphere. Carbon sequestration is the process of removing carbon from the atmosphere and depositing it in a reservoir (i.e. water bodies, soils, vegetation, and geologic formation). Carbon sequestration describes long-term storage of carbon dioxide or other forms of carbon to either mitigate or defer global warming.

Environmental Effects

Proposed Action

Under the proposed action the following impacts would likely occur:

Soils/Watershed Health – Standard #1

The proposed action would result in short term compaction of soils along cattle trailing routes. In areas with sandy soils, these impacts would be less due to the soil textures being more resistant to compaction than fine particle soils. Additional soil movement into a watershed system may result from cattle trailing activities; however, this is no different than those experienced when a large herd of elk or antelope move through an area. Nor are these impacts any different than the historical impacts of large bison herds migrating through the area. These impacts are short lived, consisting of a few minutes to perhaps an hour, and routes typically receive adequate time to return to pre-disturbance condition over the course of several months or up to a year. Soil compaction and movement would less likely occur in the fall and spring when the soil surface is often frozen. Trailing cattle across areas with steep slopes and grades may result in some increase in soil erosion and movement. These impacts may be elevated in areas with little to no soil stabilizing vegetation. However, these types of topography characteristics are typically avoided by livestock operators, as it can be difficult to trail livestock over and across steep terrain. In most instances, cattle trailing routes follow established roads or cross gentle terrain that can be easily navigated by trailing cattle. In summary, the majority of the identified trails follow on or adjacent to established roads and/or areas of previous disturbance, minimizing soil compaction and additional soil movement on native rangeland.

Livestock and wildlife trails are common within the RFO as a result of daily use to and from neighboring pastures, watering sources, supplementing locations, and feeding/bedding areas. These existing trails are utilized by permittees/lessees when moving cattle. Livestock bedding sites, as a result of a multiple day trailing operations, may exhibit increased signs of disturbance if herds are confined to small areas (i.e. temporary holding corrals); however, most bedding areas occur on private land where cattle are allowed to scatter and begin feeding or watering. If soils are frozen these impacts would be decreased and if soils are wet the impacts could be elevated. Bedding areas are typically used for a single night and then animals are moved the next day.

Soils and watershed resources that are in the process of being reclaimed (primarily due to oil and gas activities) may be delayed or have lower success rates due to livestock trailing across them. Although a stipulation in the proposed action would reduce this impact, the widespread energy development across large portions of the field office preclude being able to completely avoid crossing recent reclamation.

Livestock trailing across rangelands results in impacts caused from their hooves or “hoof action”, including small depressions in the soil, trampling of vegetation, and manure resulting from the vegetative digestion process. The depressions and/or roughening of the soil creates microsites for increased water infiltration, seedling establishment, and an increase in microorganism activity. The trampling of vegetation creates more vegetation/soil contact, promoting faster decomposition and litter accumulation and soil shading. Fecal matter (i.e. manure) helps to speed up vegetation decomposition, by increasing litter and soil organic matter. All of these factors results in increased soil protection and stability, soil moisture retention, and an increase in soil organic matter and function.

The trampling effects described above also limit microbiotic crusts to their current environment under shrubs and trees within existing trailing routes across rangelands, as they are negatively affected by the “hoof action” of large ungulates. Locations on and adjacent to roads already disturbed would not usually support microbiotic crusts, and therefore, would not be affected by trailing livestock.

Due to the location of most trailing routes on or adjacent to roads, and the short-term nature of trailing with long-term recovery times, the environmental effects resulting from issuing cattle crossing permits on soil and watershed health are expected to be minimal, resulting in RFO grazing allotments continuing to meet this standard.

Riparian/Wetland Health – Standard #2

The proposed action would have minimal effect on the riparian/wetland health standard, as the majority of the identified trailing use routes follow existing roads and/or cross uplands. Trails along roads crossing

streams use bridges or culverts and livestock in the spring are often watered at other locations. High water flow events and soft soils present during the spring are usually avoided by operators trailing livestock to reduce the risk of losing young animals that can get stuck in the mud or drowned. Crossing riparian areas later in the summer or fall, as well as ephemeral channels, (which are usually dry this late in the season), would cause temporary increases in erosion/sedimentation from increased hoof action, trampling, and defecation.

The impacts of trailing cattle through riparian areas are no different than those occurring from livestock during the allotments permitted seasons of use; however, trailing impacts are short in duration allowing the specific trailing route adequate time to recover. The majority of the identified trailing routes are utilized during fall and late summer months, when vegetation is dormant and/or has already set seed.

In a few situations, riparian areas would also receive a short duration of increased vegetative utilization, as trailing cattle would show some resistance to move through areas of more palatable vegetation. However, crossing permit requirements would stress that cattle be watered in these locations, and then moved. Camping along riparian areas would not be permitted.

Due to the majority of trailing occurring on upland sites, when riparian vegetation is dormant in the late summer or fall, or in the spring, which leads to crossing streams and drainages using culverts and bridges, the environmental effects from issuing cattle trailing permits are expected to be minimal on riparian and wetland health. This would result in RFO grazing allotments continuing to meet this standard or not contributing in the few allotments currently not meeting this standard. However, if crossing use is believed to be contributing to not meeting this standard, it will be re-evaluated and other options considered to achieve this rangeland health standard.

Upland Vegetation – Standard #3

The proposed action would primarily result in trampling, along with some limited removal of upland vegetation on public land, and all within the most common plant communities of sagebrush, saltbush steppe, and open grassland. This impact would occur as cattle utilize both cross country routes and areas adjacent to roads and water sources. Cattle trailing routes include an allowable corridor of 500 feet (although in most cases the corridor will be less than the allowable 500 feet), allowing for the likelihood that livestock will make some upland vegetation utilization. These impacts would be dependent on the number of cattle on trail and the speed at which they are being trailed.

Trampling effects to vegetation vary greatly by the season of occurrence and the length of time period over which it occurs. Trampling effects in the spring prior to plant growth would have minimal effect on plant health. Trampling effects in the spring when plants are green would be minimal since early plant growth is soft and flexible, and if utilization occurs or growing points are broken off, it is at a time of rapid plant growth so recovery once animals have passed is quick to occur. Trampling effects later in the summer and fall are likely to break off dormant forage and help crush it to the ground, where more rapid decomposition and incorporation into the surface soil horizon will occur and improve soil fertility. Since most cross-country cattle trailing and trampling occurs in the fall, it will usually be after most grazing has taken place, and not result in reduced forage for the permittee with authorized grazing in the particular allotment.

Forage use by trailing cattle along or adjacent to roads and water sources would result in minor increases of already existing impacts to vegetation. This may result in plant conditions along roads already being of lower value, in terms of species composition and palatability. Forage use in the spring would occur during rapid plant growth allowing for quick recovery once the trailing animals have passed by, with late summer and fall trailing occurring when plants are dormant, resulting in little effect to the plants in terms of vigor or recovery after grazing.

Identified cattle crossing permits would total 0.56% (2,511 AUMs) of all BLM RFO permitted AUMs (447,030) and 1.69% of those AUMs permitted within allotments that have trailing. The amount of forage use is over-estimated due to most crossing use taking much less than a full day being billed for, and with use along roads not resulting in as much use as compared to cross-country routes. When evaluating

potential trailing impacts to upland vegetation, the majority of cattle use will occur during multi-day trails as operators are more likely to allow animals to rest and graze while they are on trail. Currently identified multi-day trail use would include a maximum utilization of 709.15 AUMs or 0.16% of the totally allotted RFO grazing preference. However, the estimated use made by trailing cattle would likely be much less than projected, due to the speed of trailing, which will most likely be fast enough to limit the amount of grazing. In addition, the majority of the identified trailing routes utilize roads and/or area of previous disturbance.

The required distance traveled on a daily basis is at the discretion of the Authorized Officer, with a minimum required distance of 5 miles per day. Daily distance trail requirements would reduce the amount of utilization made by trailing cattle, and ensure that public lands are not over utilized.

Under the general use requirement of any crossing permit, livestock operators would avoid trailing along disturbance routes under reclamation when possible, and avoid camping and/or overnighting on reclamation sites.

Due to the fact that most trailing will occur in the fall when plants are dormant, the short duration of trampling or utilization effects with adequate recovery time afterward, and that most trailing is along or adjacent to roads where other factors have greater effects on vegetation, the environmental effects from issuing cattle trailing permits on upland plant health are expected to be minimal, resulting in RFO grazing allotments continuing to meet this standard.

Wildlife/Threatened & Endangered Species – Standard #4

The proposed action would have minimal impacts to existing wildlife and their habitats. These rangelands have historically evolved under grazing utilization by wildlife, and the impacts associated with the trailing of cattle are similar to those that helped shape our current landscapes and associated vegetation. Extensive populations of wildlife continue to exist within the RFO boundaries, and crossing permit requirements would ensure that wildlife impacts are kept to the very minimum (i.e. no camping within 0.6 miles of an active grouse lek during spring months, and/or no trailing activity near leks between the hours of 6pm – 9am March 1 - May 20).

Impacts to grouse would be a minimal as a result of cattle trailing, primarily resulting in birds walking away from selected habitat, or in some cases being flushed out due to the presence of the moving livestock. While 53% (209 miles) of all identified cattle trailing on BLM land is within Greater Sage-Grouse (GSG) core habitat, only 12.42% (25.56 miles) has been identified as occurring utilizing cross-country routes during the GSG breeding/nesting period of March 1 – July 15. Since the majority of trailing would occur along existing roads, this is unlikely to affect GSG, which tend to avoid these areas due to motorized traffic, dust on vegetation, and lower quality habitat. Cross-country crossing use is more likely to disturb nesting birds or broods in upland locations away from roads. However, recent studies within the RFO show GSG hens choosing the denser canopy of mountain big sagebrush to nest under, that would most likely be avoided by trailing livestock since they are harder to walk through. In addition, a study in Utah showed cattle were just as likely to avoid, as to step on, GSG nests (Danvir, R. E. 2002). In spring months, during the GSG mating/breeding season, there are 107.41 miles (disturbance routes and cross country) of identified cattle trail occurring within the 2 mile buffer of identified grouse leks. While not all identified leks are active, cattle trailing along these routes would only be permitted to occur between the daylight hours of 9a.m. - 6p.m. to reduce impacts to strutting/mating GSG. Only 20.39 miles or 5.49% of the cattle trailing is identified as cross-country spring trailing, and will occur within a GSG lek 2 mile buffer.

Table #3 - Identified Cattle Trails near grouse leks that will be required to trail between the hours of 9am-6pm March 1 – May 20

Operator Name	Livestock Numbers & Trail Dates
3 Forks Ranch	1800-2000 Yearlings (5/1-5/31)
Bruce Thayer	385 Pair March/April, Oct/Nov

Jolley Livestock	400-450 Pair Late April, Early May
Ray Weber - Kirk Shiner "Lease"	650 Head (4/1-10)(12/1-10)
Randy Montgomery	200-300 Head (4/15-5/10) (11/15-12/15)
Steve Adams	200-300 Head (10/20 - 11/15) (3/1-15)
Purple Sage - Bob Davis	100 Head +/- (May) 200-300 Head (09/15-10/30)
Bruce Thayer	250-400 Pair March/Apr and Oct/Dec
Bruce Thayer	250-400 Pair May/June and Oct/Nov
Bruce Thayer	250-400 Pair May/June and Oct/Nov
Rodewald	700 Head June 1/August 15
Hunter Livestock	650 Head Early to Mid-May; Early to Mid-August
Overland Trail Cattle Company	1000-2000 Yearlings Mar/Apr and Oct/Nov
Kelley Land and Cattle	700 Pair May 15/June 15, Sept 15/Oct 15
Kelley Land and Cattle	700 Pair 3/25-4/15, 5/25-6/25,10/1-11/1,12/20-1/10
Kelley Land and Cattle	700 Pair 12/20-1/15, 3/25-5/1,10/15-11/15
Kelley Land and Cattle	1000 Yearlings or 500 Pair 5/1-5/15, 10/15-11/1
Darlene Herman	300 Cows 3/10-4/10
Three Mill Iron Ranch	350 -450 Head (Late April -May; Sept-Oct)
Jean George Lease to Harkins	300 Head (May/June -Sept/Oct)
Jean George Lease to Harkins	300 Head (May/June -Sept/Oct)
Jack Berger	300 +/- Pair (May, June, Oct, Dec, Jan, Feb)
Jack Berger	175+/- Pair (May-June)
Marty Annis	250 Pairs (5/1) (11/1)
JT Nunn Needmore Land & Cattle	320 Pairs (5/1) (11/1)
Bummer Ranch	300-500 Pairs 5/15-6/5, 10/15-11/1
Bummer Ranch	300-500 Pairs 5/15-6/5, 10/15-11/1
TA Ranches	1000 Pair (5/15-6/10) (9/20-10/10)
TA Ranches	350 Cows/1700 Pair (11/15-12/1)(4/28-6/15)(2/15-3/25)

Impacts to Columbian Sharp-Tailed grouse (CSTG), within the RFO, as a result of cattle trailing, are minimal. Only 1.37 miles of trail along a road have been identified within the CSTG lek buffer area, and only 0.82 miles of the trail occurs during spring months. No cross country cattle trails were identified within the CSTG lek buffer areas. All identified cattle trails within the CSTG lek buffer area exist within a county road right-of-way.

Cattle trailing impacts through crucial winter ranges (CWR) for big game species would be minor, primarily resulting in displacement due to human presence, and to a lesser extent the herd of cattle being moved. Identified cattle trails within elk CWR total 21.37 miles, and only 2.23 miles is identified as cross country routes. Thus, only 0.064% of all BLM cattle trailing would impact elk CWR. When including the 500 foot cattle trail corridor, cross-country trail impacts would result in the potential disturbance of 145.34 acres of BLM land. Impacts to mule deer CWR would total 65.64 miles of cattle trailing, with only 9.03 miles identified as cross-country trailing routes, thus, resulting in a possible disturbance of approximately 571.91 acres of BLM land within mule deer CWR. Antelope impacts would consist of 65.17 miles of cattle trail within identified pronghorn antelope CWR. Cross-country cattle trails, within the identified antelope habitat, is 15.60 miles or approximately 957.81 acres. Most cattle trailing occurs during the spring through fall months, and outside the identified crucial winter range protection period of November 15 to April 30.

Cross-country cattle trailing impacts would consist of vegetative use by cattle as they are being herded along trailing routes. However, herded cattle would have little time to make any significant vegetative utilization, even if they are temporarily rested near water sources and then placed back on trail. The majority of the impacts to wildlife, as a result of cross country cattle trailing, would be wildlife displacement resulting from dense animal herd movements and human presence. However, while this type of impact would be the most abundant, it would be very short in duration. Wildlife may be dispersed for a period of a few minutes to several hours, but would be expected to return shortly after cattle trailing activities have subsided.

Elk have the highest diet overlap with cattle and are the most sensitive to disturbance by humans. Elk CWR is often located on wind-blown ridges or steeper south and west facing slopes that stay open and available for feeding during the winter, and are seldom used for trailing livestock. Elk also stay away from more frequently used roads and vehicle traffic, where cattle crossing use is more likely to occur. In addition, most elk stay in, or adjacent to, aspen stands or at higher elevations in the National Forest until snowfall brings them into the open rangelands, which is usually well after cattle trailing has occurred.

Impacts to raptors would also occur as a result of trailing cattle. These impacts would result in birds being temporally displaced from active nest locations, as a result of human presence. These impacts would be lessened should cattle herding activities occur via horseback rather than motorized vehicle. A total of 167.77 miles of cattle trail are identified within the 1 mile raptor nesting buffer. However, this data includes all recorded RFO raptor nesting sites, including those that have been in-active for years, and does not eliminate cattle trails occurring during periods when raptors are not nesting. Cross country cattle trails within the 1-mile raptor nesting buffer consist of 52.74 miles, which is 13.72% of all spring BLM identified cattle trails. Although temporary displacement of raptors may occur, this is not expected to result in any negative effects on raptor populations.

Overall, wildlife disturbances associated with trailing cattle would be short in duration, as trailing activities across an area would last no longer than several hours within a single 24 hour period, and in most cases no more than a few minutes. The method of trailing is most likely to have the most impact to wildlife as a result of noise disturbance. In an instance where cattle are trailed cross country by use of motorized vehicles, wildlife would likely disperse until the noise disturbance has moved away from the immediate area. However, cattle that are trailed via motorized vehicles along existing disturbance corridors such as roads are likely to have little to no impact on wildlife, as most animals have acclimated to vehicle traffic and their associated noise. Herds moved via the use of working livestock (i.e. horses) are likely to have little or no impacts to existing wildlife as the method introduces little noise disturbance to an area, and human presence is less obtrusive to wildlife when riding horseback.

The majority of the identified cattle trailing routes occur through vegetation communities that are very abundant within the RFO. These communities consist mainly of sage/grass and desert shrub types. Any direct impacts to a site specific area as a result of cattle trailing disturbance, would be absorbed by the neighboring vegetation community of the same type. For example, wildlife that have been displaced as a result of human presence from trailing activities, would easily find similar suitable habitat that would satisfy their hiding, thermal, and /or feeding requirements, until the disturbance subsides.

Threatened, Endangered, Candidate, and Proposed Species

There are 4 known threatened & endangered, candidate, and/or proposed species that have the potential to exist within the boundaries of the proposed action. Black-footed ferret, Prebles meadow jumping mouse, Ute ladies' tress, and the Colorado butterfly plant have all been identified as existing within, or having potential habitat along or adjacent to, specifically identified trailing routes. Initiation of informal consultation with the U.S. Fish and Wildlife Service (USFWS) was recommended/required, as a result of the proposed action. However, a may affect (MA), not likely to adversely affect (NLAA) determination was made by BLM RFO biologists. Consultation made with the USFWS resulted in concurrence with BLM RFO staff biologist assessment(s). A few trailing routes were slightly modified as a result of the environmental review of the proposed action. As these conditions and species listings may change,

consultation with BLM and the USFWS would be performed as part of the annual authorization to assure the most current information is accurate.

Fisheries

Cattle trailing would have little impact to existing fisheries within the RFO. There are 9 identified trails that cross over perennial waters on BLM land with existing fisheries (not necessarily recreational). The majority of the identified trails utilize bridges or culverts for cattle crossing, and streams large enough to support fisheries are more likely not to be forded with livestock during crossing use. Impacts to fisheries would result from the short duration increase in turbidity and sediment to a system as cattle cross along and over riparian banks. However, these impacts are no different than those caused by resident and migratory wildlife herds and/or annually permitted livestock use, with the exception that trailing cattle impacts would be short in duration.

Weeds

Cattle trailing would have impacts on existing weed populations, and increase the potential for the spread of noxious and invasive weed species. The majority of identified cattle trails utilize areas of previous disturbance, which are currently monitored for weeds. Any identified areas are then treated (i.e. sprayed with chemicals) regularly. Weed infestations located along roadsides or fence lines are generally easily accessible by spray crews for treatment, and present less impact to rangeland health. The potential for weed spread across interior landscapes, not adjacent to roads, by trailing cattle, is increased, and the weeds are more difficult to locate. These same risks are presented by wildlife as they feed or travel through weed infested areas. Known weed populations would be avoided by trailing cattle, and no overnighting would be allowed near identified noxious and/or invasive weed populations as a result of the proposed action.

Water Quality – Standard #5

Water quality would be affected to a minor extent. Similar to riparian/wetland habitat, cattle trailing would not result in additional failures of this standard. This is primarily due to the following of existing roads and bridges across streams, as well as the avoidance of these sites in the spring and early summer months when water levels are high and soils soft, raising the risk of losing small calves. Crossing of ephemeral channels and wet areas (in limited instances) does occur later in the summer and fall. These impacts would result in a temporary decrease in overall water quality as a result of hoof impact and defecation. The extent of these impacts would also depend on the width of the crossing and the density of disturbance as a direct result of the number of livestock on trail.

There are two identified routes (Map 11 – Muddy Creek Trailing Routes) that intersect, cross, or parallel Muddy Creek, west of 789, which is the only watershed intersected by an identified cattle trailing route listed on the 2010 Wyoming State 303d list. The trailing route crossing located at Dad is made via a bridge and has no impact to the current status of the creek. The route that parallels Muddy Creek North and South, west of Highway 789, stays west of the creek along a pasture fence line (west side of the fence), and follows an improved oilfield road, thus, eliminating any additional disturbance to the 303d listed section of Muddy Creek. This portion of Muddy Creek is likely to be de-listed in 2014 due to a re-evaluation of conditions (2012 Standard and Guidelines consultation with Wyoming Department of Environmental Quality-Water Quality Division).

Air Quality – Standard #6

The proposed action may result in an increase in particulate in the form of dust. Spring and fall trailing would likely result in little to no additional particulate matter being introduced into the atmosphere as a result of cattle trailing during periods of increased soil moisture. However, cattle trailing activities that occur during dry summer months would introduce some additional dust into the atmosphere as a result of hoof action on dry soils. The increased levels of particulate matter are not anticipated to cause major decrease in air quality, and any impacts would be short lived and dependent on current soil moisture

condition and wind during the time of crossing use. Under the proposed action air quality would continue to meet state standards.

Recreation, Visual Resources

The visual resource rating worksheet completed for the proposed action resulted in a "no change" to the visual resources along the identified trailing routes. No long-term change to the VRM class would occur as a result of this action.

Short-term impacts to recreation would include loss of hunting opportunities, if cattle are trailed through an area with an open hunting season. This would only occur during fall trailing periods and last for a few hours at most in localized areas. Wildlife would return to the area in subsequent hours/days following the trailing activity. The majority (73.86%) of the identified cattle trailing routes under the proposed action utilize areas/routes of previous disturbance, such as improved and unimproved roads. In these instances impacts to recreationists, as a result of cattle trailing, would include a very short delay in travel. Delays would not be expected to be more than a few minutes, as cattle are allowed to pass around motorized traffic. Since most visitors to public lands are from urban areas, encountering a herd of animals on trail is commonly viewed as a unique or positive experience rather than a negative one. Previous conflicts resulting from coinciding recreational and cattle trailing use have been non-existent within the RFO.

Lands with Wilderness Characteristics

While the proposed action would have minimal effects on existing landscape characteristics along the identified trailing routes, an LWC inventory was conducted by BLM RFO specialists. The resulting inventory concluded that the identified trailing routes currently lack the required characteristics for LWCs. The majority (283.88 miles or 73.86%) of the identified routes utilize corridors of previous disturbance, and most cross county routes utilize existing fence lines and rangeland improvements, such as, water developments and corrals. Crossing use and the impacts associated with dense animal herd movement are natural, and also result from migratory wildlife herds year round. Disturbances resulting from wildlife/livestock are natural and helped shape current landscape characteristics.

Cultural Resources

There are no additional impacts, other than those that have occurred from active and historical livestock trailing, expected to cultural resources as a result of the proposed action. Grazing and livestock movement/herding/trailing has been an important activity across the RFO landscape, and numerous cultural sites recorded within the office are a result of the livestock industry (i.e. historic trailing and livestock working camps and facilities). A majority of the identified trailing routes utilize existing corridors of disturbance, and/or routes that have been utilized for generations. Analysis by RFO cultural staff has resulted in no special stipulations to any identified cattle trailing routes under the proposed action.

Grazing Resources

Under the proposed action there would be no additional impacts to grazing resources. BLM policy describes billing for AUMs for use and occupancy, the latter being more the case for cattle trailed along roads, where little or no forage utilization may occur. Even if the maximum amount of AUMs calculated for crossing use were to be utilized, it would still only total about one half percent of all permitted AUM use in the RFO. In comparison, during severe drought years permittees often make voluntary reductions of 50% or more. Coordination among rangeland users and the RFO would ensure that resources are not over utilized , and that impacts associated with cattle trailing (i.e. soil disturbance, water use, recreational conflict, and/or wildlife disturbance) are kept to a minimum. Coordination among land owners and permittees/lessees would be required for the use of assigned rangeland improvements on BLM land. In the event that cattle trailing would occur during a period of drought or across an area of wildfire/prescribed fire there may be the need for temporary rangeland improvements (i.e. stock water, temporary fencing). Temporary rangeland improvements on BLM land would require a separate permitting/NEPA/clearance process.

Wild Horses

There are no additional impacts, other than those that presently occur, to wild horse management areas or wild horses, as a result of the proposed action. Wild horse herds have established themselves around livestock grazing, and are accustomed to present day activities associated with livestock management (i.e. trailing, gathering, and watering). There are only two cattle trailing routes identified within RFO WHMAs. The identified routes (Map 12 –Adobe Town Cattle Trailing Routes) are both located within the southern and eastern portions of the Adobe Town WHMA, and are utilized by the Raftopoulos Brothers and the Three Mill Iron Ranch. The Raftopoulos Brothers crossing use is made during June and/or September with 200-300 head. This three mile trail requires no overnighting on BLM lands and is completed in less than one day. The Three Mill Iron Ranch trails April – May with 350-450 head, and again in September-October on their way home. Their identified trail is 9.5 miles, utilizes both the Standard and Shell Creek improved roads, and is completed in one day, with no overnight camping on BLM land.

Total trailing identified within the Adobe Town WHMA is 12.5 miles or 753 acres when applying the 500' trail corridor. The Adobe Town WHMA totals 477,829.26 acres. Cattle trailing routes would include a temporary disturbance to approximately 0.16% of the entire Adobe Town WHMA as cattle are trailed through the area using existing roads.

Impacts to wild horse would include the displacement of animals resulting from human presence and competition for water and vegetation resources. However, all associated impacts would be minimal, and temporary in duration as trailing activities associated within the identified HMA would be completed in a single day.

Cumulative Effects of the Proposed Action

The analysis area for the cumulative effects described below is for the entire RFO. This section includes the historic, present, and reasonably foreseeable future actions (next 5-10 years). Primary factors discussed include livestock grazing, industrial development, wildlife and wild horses, recreation, urban-interface/habitat conversion, and wildfires/vegetation treatments

Soils/Watershed Health – Standard #1

Soils/Watershed health is affected across the RFO from trampling and grazing by livestock (including range improvements), and to a lesser extent by the activities of wild horses and wildlife. It is also affected in specific areas by industrial development, vegetation treatments and wildfire, and recreation (off-road vehicle use).

Livestock use, which began on public rangelands in the RFO in the 1860s, was not regulated until the passage of the Taylor Grazing Act in 1934 and the establishment of the BLM in 1946. Historic overgrazing led to the loss of plant cover and increased soil erosion, resulting in bare ground, gullying, and reduced vegetation production and composition, including increases in cacti and invasive plant species. The establishment of identified grazing allotments and rangeland vegetative surveys resulted in reductions to livestock stocking rates and the development of grazing systems that have continued to the present day. In limited locations there were also extensive watershed improvement projects, including detention dams, channel drop-structures, spreader-dikes, sagebrush control, contour furrowing and vegetative seeding. Monitoring of rangeland health through photo-points, transects, and upland health trends show a large decrease in bare ground to litter and plant cover since the 1960s, with pedestals and gullies still present but healing. Changes to more desired vegetation, like large perennial bunchgrasses, is slower to occur but has been documented in locations due to changes in grazing management. In some of the poorest condition areas, historical sheep trailing routes were altered to more direct routes, aiding in rangeland health and recovery. Impacts would not be diverted somewhere else, as sheep trailing has declined approximately 90% from levels observed 80-100 years ago (communication with older permittees).

The development of allotments with largely single livestock users has helped reduce average stocking rates, as individual operations adjust annually to climate and other conditions. It also results in more residual forage for watershed protection and incorporation into soils, and has led to improvements in rangeland health, as a result of increased livestock grazing management. Although current livestock use does result in trampling, soil disturbance, and the compaction of some soil types, these impacts have become shorter in duration and magnitude, with greater time for recovery. This is similar to, but not the same as impacts from historic bison use, which would also have resulted in elevated densities of hooved animals on a site, but with short duration and long periods of time for site recovery. This historic grazing presence would also have limited the development of microbiotic crusts, which are poorly represented in this area, with most development either underneath shrubs or in exclosures where grazing has been excluded. As one moves east across the RFO, through the transition zone between interbasin sagebrush and Great Plains grasslands, or upward in elevation where precipitation and vegetation production increases, there is an absence of existing microbiotic crusts. Livestock use and impacts upon soils and watershed health are expected to remain similar to current levels, and to slowly improve as bare ground levels are reduced and litter and organic matter accumulation slowly increase with time.

Wild horses and wildlife generally have less impact upon soils and watershed health as opposed to livestock. However, in concentration areas like crucial winter ranges, watering sites, or during periods of elevated population levels, impacts from wild horses and wildlife may increase. Wild horse and cattle diets are often very similar, resulting in the consumption of the same desirable vegetative species. However, the impacts between wild horses and cattle may be different, as wild horses are present on rangelands throughout the year, and the majority of cattle use is made via developed rotational grazing systems. High use levels, as well as long duration of use on desirable species may result in greater amounts of less desirable native species (i.e.. rhizomatous wheatgrass, saltgrass, sandhill muhly and prickly-pear cactus), invasive species (i.e. cheatgrass and bur-buttercup), and higher levels of bare ground. This in turn may result in higher potential for soil erosion, loss of vegetative productivity, and sediment delivery into waterways. Vegetation around rare desert water holes may also be reduced in composition to less desirable species or bare ground, through both trampling and utilization by wild horses. Wildlife are typically more dispersed, and don't remain in one area very long, as compared to livestock and wild horses. However, on some big game crucial winter ranges, wildlife remain for longer periods of time, utilizing vegetation at levels which result in altered species and structure composition. These impacts are more frequently observed on mule deer winter ranges where shrub and herbaceous composition is being replaced with juniper, cheatgrass, annual forbs, and bare ground. This may also result in a higher potential for soil loss, reduced site productivity, and increased sediment delivery into waterways. Wild horse use and impacts upon soils and watershed health are expected to remain similar to current levels, as long as AML's and BLM policy on wild horse management is not changed. Wildlife in this context primarily relates to big game numbers and population objectives, with most areas supporting high elk numbers that are currently being reduced, and therefore, would have a reduced level of long-term impacts. On the other hand, most herd areas for antelope and mule deer are below population objectives, which may slightly increase impacts in the future as these populations increase.

Industrial development is associated with exploration and construction of facilities, roads, and other infrastructure for minerals, wind, powerlines and/or pipelines. These actions result in the loss of, reduced or altered vegetation cover, and hydrologic changes in surface runoff due to roads. Current developments of oil and gas resources have resulted in a 5-10% percent field office wide disturbance, with that number declining with short-term reclamation. Projections on surface disturbance from proposed wind power development would increase that value to as high as 15 percent, again followed by reductions due to reclamation. However, in areas with low potential reclamation soils, most native species found on-site are not commercially available to use in reclamation and the site characteristics also reduce the potential for successful reclamation. In these instances, there is more bare ground and disturbed soils with a higher potential for water and wind erosion, accompanied by increased sediment delivery into waterways. The development of roads for transportation systems, within industrial development areas, often results in greater impacts than the facility locations themselves. Roads built across slopes modify overland flow of water by acting as a dam, changing flow patterns from overland to point sources, as water is collected and passes through the road via culverts, staying in a concentrated form as it is released on the out flow side of

the culvert. This results in larger gullies below roads, with in-channel soil erosion, increasing the sediment delivery into waterways downstream. It also results in reduced overland water flow below roads and deeper gullying that increases the potential for desertification, reduced site productivity, and higher levels of bare ground and soil erosion. The miles of roads south of Wamsutter have doubled between 1994 and 2009, and will likely continue to increase with future development. Completion of the new Continental Divide – Creston (CDC) Oil and Gas Development EIS with around 9,000 new wells will result in new roads, drill pads, pipelines and other surface disturbing activities which will impact soils and watershed health. The Chokecherry Wind Farm will result in the construction of 1,000 large wind turbines, along with pads, roads, powerlines, and other facilities that will also increase impacts to soils and watershed health. The four proposed new transcontinental powerlines would increase disturbance impacts to this resource, but would be more short-term in nature and much smaller in scope. There may be other (not yet defined) energy development related activities that increase impacts to this resource.

Prescribed fire and wildfire vary in their short-term impacts to soils and watershed health. Wildfires, due to their frequent occurrences during summer months or period of low vegetative moisture content, remove vegetation soil cover and may form a soil crust or sterilize the soil, burn into plant crowns and root systems killing more plants, and/or remove streambank vegetation. These impacts increase the potential for soil erosion, loss of site productivity, reduced or altered species composition, and invasion by noxious and/or invasive plant species. If a severe precipitation event occurs prior to vegetation recovery, there may also be extensive gully erosion and sediment delivery into waterways. Prescribed fire would have similar effects but to a lesser extent since they are typically implemented during spring or fall months when vegetation growth is usually dormant. These types of treatments are also generally smaller in size and have reduced negative short-term impacts on existing vegetation. Mechanical and chemical treatments to vegetative communities are designed to not remove all vegetation, and generally result in organic matter being added to the soil surface, improving the existing organic layer. Vegetative and/or soil disturbance, resulting from mechanical or chemical treatments, increases the potential for invasion or expansion of noxious and/or invasive plant species. However, these types of treatment have lower potential for this response than the removal of all vegetation when burning. All treatments usually have long-term beneficial impacts to soils and watershed health by improving the herbaceous soil cover and stability, species and structural diversity on site, and improved infiltration and retention of water. This results in reduced soil erosion, and improved storage and replenishment of underground water systems. The use of prescribed fire is increasing in cost and being reduced in the size of areas treated, due to both greater areas of wildland-urban interface and the BLM's sage grouse policy, with these trends likely to continue in the future. Although current frequency, intensity and size of wildfires in the RFO is not large, the trend for wildfires could increase as litter and plant biomass increase through improved livestock management and in areas with low amounts of public land that change to other land uses.

Recreation typically results in short-term soils disturbance (i.e. trampling and compaction of vegetation and soils around camping sites), that recovers quickly afterwards. The principle disturbance from recreation upon soils and watershed health results from off-road vehicle use, of which, much of it is illegal cross-country driving. This often occurs during hunting season for big game in the fall or when antler collecting in the late winter and spring. These activities, particularly when conditions are wet, may result in the creation or expansion of tracks or ruts in soils that can collect and funnel water flow during runoff events, increasing soil erosion, reducing site cover and productivity, and increasing sediment delivery into waterways. As more public gain access to off-road vehicles, these impacts are likely to increase over time.

The issuance of crossing permits for trailing of livestock would slightly increase the impacts described above on soils and watershed health. However, the majority of trailing on or adjacent to roads would minimize the effects of trampling and utilization in these areas. In upland locations where there is trampling, compaction, forage utilization or other impacts, the short term nature of trailing would reduce the level of impact and may allow for recovery time between trailing events if precipitation and/or other climatic (freeze/thaw) cycles occur, even in addition to the activities and effects described above.

Riparian Health – Standard #2

Riparian/wetland health is directly influenced by grazing animals, primarily cattle, in addition to wild horses and wildlife. The emphasis placed on this habitat since the mid-1980s and proper functioning condition assessments conducted since the mid-1990s has led to changes in livestock management in terms of season and duration of use. Use of pastures and rotation of livestock grazing between them has reduced the duration of use on streams from months down to weeks or days, with season of use shifted to cooler times of the year where possible, to minimize growing season and/or "hot season" grazing in these habitats. Seeps and springs have also been protected with off-site water developed, particularly in desert and foothills locations, to reduce trampling and grazing pressure on this rare and valuable habitat that only comprises about 1% of the landscape. As a result of these efforts, the health of riparian/wetland habitats is improving, as documented with photo-points, channel cross-sections, vegetation transects, and other monitoring. In many areas these habitats are now in proper functioning condition, however, there are still locations it will take more time for full recovery of natural stream morphology and a mixed age-class and structure of woody plant species.

Although livestock grazing is often contended to have the greatest effect upon riparian/wetland habitats, the influence of other human impacts upon these habitats cannot be overlooked. These impacts include the construction of dams, flooded habitat, and altered hydrologic flows downstream, agricultural and municipal draining of water from the land for development as well as diversions with artificial barriers and reduced stream flows, historic removal of beaver and later government policies that supported continued beaver as well as willow removal, and more localized practices such as tie runs and point sources of pollution into these systems. Although some of these practices have changed, many still remain, and their effects on riparian/wetland habitat will continue and/or take many years to see recovery.

Industrial development typically has more indirect rather than direct impacts upon riparian/wetland health, partially due to not building in floodplains and the RFO RMP stipulation to avoid riparian/wetland habitat by 500 feet with new development. However, linear infrastructure like roads and pipelines may still have to cross these habitats and create limited disturbance that is mitigated through construction and reclamation measures. Indirect impacts are more a result of upland road design that historically was not as good in terms of increasing sediment loading into ephemeral drainages and streams. Increased engineering of new roads, with additional culverts, wing-ditching, water-barring, and other reclamation practices have helped reduce adding sediment into waterways and riparian habitat.

Recreation can also play a small role in riparian/wetland habitat, primarily in terms of existing or new crossings with vehicles to access public lands for off-road recreating, hunting, fishing, and antler collecting. Education of the public regarding vehicle use and effects to riparian habitat is still needed to address these issues.

The additional effects of livestock trailing upon riparian/wetland habitat would be minimal, due to the crossing of live streams using bridges and culverts, using off-channel watering sources, and since the majority of trailing occurs in the late summer and fall across upland rangelands and ephemeral channels when they are dry and less prone to damage from trampling.

Upland Vegetation – Standard #3

Vegetation within the RFO evolved with grazing and browsing by wildlife, although in a more migratory and shorter duration of use nature when compared to current uses. Livestock use is confined to assigned allotments for a few weeks up to multiple months, and even though wild horses and wildlife move around to a greater extent, they are still more confined in their movements (than historically) by human infrastructure (i.e. highways, fencing, towns,, industrial and agricultural development). The general effects of animal use include forage removal, trampling, and defecation, with negative impacts observed with too high a level (or duration) of any or a combination of these three factors. The most noticeable impacts to vegetation have been from livestock, particularly historically. Prior to the Taylor Grazing Act, livestock use in the RFO included users based in Wyoming, as well as users based in Colorado, Utah and Idaho. Some sheep producers were on trail nearly year-round and may not have had any base property at all. This

un-controlled high level of livestock use led to severe declines in range condition during the 1920s and 1930s (discussion with old permittees). In some areas, plant spacing increased to five to ten feet when most currently plant spacing is measured in inches. Extensive watershed rehabilitation efforts were begun in these poorest sites in the 1950s and 1960s, as some of the earliest BLM priorities to improve vegetation cover and production while reducing soil erosion. The reductions in stocking rates and implementation of management plans have had a positive influence upon the upland vegetation resource. However, the effects of historic overgrazing and poor management are still visible in the current species composition, in terms of lower abundance of desired bunchgrasses, higher levels of "increaser species", and the amount or presence of invasive species. Although improved livestock management can lead to improvement in vegetation values in many locations, sites adjacent to streams that have down-cut ten to fifteen feet will continue to experience long-term effects from desertification that will likely permanently alter the vegetation species composition, cover and productivity on adjacent upland plant health.

Wild horses and wildlife do not typically have the same impacts upon vegetation as livestock, however, in locations where animals concentrate such as at water sources and crucial winter ranges, or when populations reach elevated levels, negative impacts upon vegetation occurs. This may be due to forage use as well as trampling, but can result in a reduction of desired species composition, cover and production, and an increase in less desired species, invasive species and/or bare ground. Population control is the principle method to control these impacts, although other factors may be part of the solution as well (i.e. upland water development).

Vegetation treatments and wildfires usually have short-term negative impacts to vegetation, which are more than off-set by long-term beneficial effects. Wildfires and prescribed burns are more natural in their effects, although past suppression of wildfires may lead to un-natural build-up in fuel loads that could result in higher intensity fires and increased acreages burned. Suppression of wildfires has also led to conifer encroachment in shrublands and aspen woodlands, increased potential for plant diseases and insect infestations to occur at epidemic proportions, and reduced the abundance of early seral species across broad landscapes. The presence of cheatgrass within the RFO does affect the local response to wildfires as well as plans for prescription burns. However, current fire frequency, livestock management and climate have resulted in long-term recovery of native perennials and not the expansion of cheatgrass as observed in many other locations of the intermountain West. The RFO also does not have many areas that were re-seeded to non-native species like crested wheatgrass. Approximately 4,000 acres were re-seeded in the Muddy Creek watershed that remains dominated by crested wheatgrass, although native saltbush steppe species are slowly increasing into this monoculture plant community. The principle negative effect observed from past vegetative treatments was the loss of forb diversity in areas chemically treated with 2-4,D to control sagebrush. These treatments primarily occurred between the 1940s and 1970s, and reduced forb abundance of species actively growing in June when sagebrush treatments usually occurred. The development of products like tebuthiuron, which is now used in sagebrush control with minimal side effects to other species, has minimized the long-term negative impacts of vegetation treatments upon upland plant health.

Industrial development is the principle permitted use that directly results in total loss of vegetation. This impact is directed away from less common plant communities (where possible), with an emphasis on minimizing the loss of vegetation through various best management practices. Examples of this are multiple gas wells located on a single drill pad, locating gas lines under or adjacent to access roads, using portable tanks for drilling fluids rather than pits, and minimizing the size of area disturbed. Short-term reclamation of drill pads and pipelines also reduce the duration of lost vegetation, although successful reclamation is not always achieved. Drought may often delay successful reclamation and require multiple attempts at re-seeding, and initial site disturbance and proper removal and separation of topsoil and subsoil material also is a factor. Another factor involved is the lack of commercial seed sources for most native forbs along with some of the grasses and shrubs. Recovery of native species diversity is currently more reliant on reinvasion by these species located on adjacent rangelands; however, the time that it will take and the conditions necessary for this to happen are often unknown. Much of this disturbance also results in the loss of soil structure, which can also extend the time needed for successful reclamation. More attention to initial site characteristics, site disturbance, use of special techniques (i.e. mulching), and more rapid reclamation have led to more recent success in this area. Short-term disturbance from energy development

is likely to continue to increase as oil, natural gas, and wind power is developed in the RFO. However, more stringent reclamation plans, limits on levels of disturbance in non-reclaimed status, and maximum disturbance levels (5% in GSG habitat) should prompt more rapid reclamation efforts and reduce the level of long-term disturbance to vegetation.

Recreation impacts upon vegetation are relatively minor and typically involve the flattening of vegetation due to off-road vehicle use and around campsites. These impacts are short-term in nature with adequate time for vegetation recovery. The only long-term negative impact results from vehicle tracks in wet conditions on steep slopes that become vertical gullies with the loss of vegetation cover and productivity along these routes.

The issuance of crossing permits for trailing livestock across public lands would increase vegetation use by a very small amount, and add trampling and defecation impacts primarily along roads that are already impacted by other factors. This would also be a relatively small additional impact to vegetation, on top of what has been described above. It would not affect whether upland plant health is being met in light of the time of year most of it occurs in and the much larger issues that do affect this rangeland health standard.

Wildlife/Threatened & Endangered Species – Standard #4

Wildlife and Threatened and Endangered Species (T&E) habitat is affected by other resources and land uses, in terms of alteration or loss of habitat, fragmentation of habitat, short to longer term displacement, and competition for forage, water and space. These other resources and land uses include livestock grazing, industrial development, recreation, vegetation treatments and wildfires, wild horses, and other wildlife.

The principle effects of livestock grazing on wildlife/T&E species and habitat are competition for forage/water, displacement, and alteration of habitat. Livestock use in the RFO is approximately 90% cattle and 10% sheep, so the principle wildlife species affected in terms of diet overlap with cattle is elk. Particular areas of concern would be elk concentration areas such as parturition habitat and crucial winter range. There are no currently identified resource issues in these areas, however, studies have been initiated on the Baggs elk winter range to better define elk and cattle use in evaluating existing elk population objectives. Elk populations in most herd units are currently above population objectives and appear to be healthy and thriving. Domestic sheep diets overlap to a high degree with both antelope and mule deer. Antelope herds in much of this region are currently at or just below herd population objectives, while the majority of mule deer herds are below herd population objectives. The only wildlife habitat to fail rangeland health standards in this region is the mule deer crucial winter range in the Little Snake River valley and the upper North Platte River valley. There is no winter sheep use in either of these two areas and a low amount of winter sheep use in other crucial winter range areas. Monitoring in these other locations show good browse condition and vigor with low to moderate levels of annual utilization. Bighorn sheep populations are limited to a half dozen locations across the RFO characterized by steep, rocky terrain. There is no active domestic sheep use on BLM-administered public lands within nine miles (national BLM guidance) of any bighorn sheep population. Temporary displacement of big game and other wildlife species is likely when a band of sheep or large cattle numbers are present, due to the presence of the livestock themselves, or a rider/herder and/or herd dogs. This impact would also be minimal when animal trail routes follow roads. Raptors and Greater Sage-Grouse are species of concern in terms of displacement from nesting sites and leks. Since the majority of raptor nests are located up off the ground to avoid predation, the stipulation to avoid camping near these sites should protect raptors from any impacts of trailing livestock. Greater Sage-Grouse have the potential to be displaced or affected by habitat alteration caused by livestock and roundup/trailing activities. These effects should be minimal for the following reasons. Current research within the RFO shows greater sage-grouse nesting where the mean big sagebrush cover is 39%, which equates to the more dense patches of sagebrush that livestock typically walk around or only use after more available forage has already been grazed; monitoring of Greater Sage-Grouse nesting habitat shows that most sites have adequate residual and new forage growth to meet the needs of nesting hens, and photos and observations by staff show this patchiness grazing pattern is common across much of the RFO. Cattle grazing also affects late season brood-rearing habitat for greater sage-grouse in riparian zones, which historically were degraded by season-long and/or concentrated use. Recent trends

show many of these sites now in proper functioning condition or approaching it, which should relate to good quality habitat for grouse.

Range improvements constructed for livestock management typically involve fencing and water developments that may have both positive and negative effects to wildlife/T&E species and their habitat. Fences help to control the timing of livestock grazing in order to maintain or improve rangeland health. However, fences (particularly historic sheep designs) also increase animal stress, energy loss, injury and mortality as they move and pass under, through and across fences. Birds may also strike fences when flying low and become injured or die. Modification of fences to more wildlife friendly designs, as well as marking fences to make them more visible to birds, reduces the negative effects that fences have on wildlife/T&E species. Water developments provide more reliable water sources to wildlife, but may lead to extended use of critical wintering habitats and/or result in trapping/drowning them in watering troughs, resulting in mortality. There is more emphasis on the development of wells and pipelines as reliable water sources (compared to reservoirs) that can be controlled as to water availability and not extend big game use in winter range. The requirement to equip all watering troughs with wildlife escape ladders helps minimizing wildlife mortality related to most water developments.

Industrial development occurs in various locations across the RFO, in terms of oil and gas fields, mine sites, wind farms, gravel pits, highways and railroads, and corridors for pipelines and powerlines. The higher the intensity of development corresponds to a greater loss and/or alteration of wildlife/T&E habitat, with total loss (until final reclamation) of habitat at some mine sites. The type of development also relates to the type of wildlife affected, with bats, raptors and other birds more impacted by powerlines and wind farms, whereas terrestrial wildlife species are more affected by disturbance and habitat fragmentation resulting from roads, ground facilities, and greater human presence associated with development, production and maintenance activities. As described above, habitat loss and/or alteration may affect 10-15% of a landscape with short-term reclamation reducing this level to 5-10%. However, forb diversity may take much longer to restore due to the lack of commercial seed sources for most native forb species, and shrub composition and structure may also take much longer to restore due to both the life-cycle of these species, lack of knowledge on recovery techniques, and lack of commercial seed sources for certain species. Impacts from industrial development include displacement, loss and/or alteration of habitat, stress and energy loss, injury and/or mortality. These impacts may be partially off-set by the use of "timing and distance" stipulations for important habitat areas, such as nest sites, leks, and crucial winter range. There may also be benefits to certain species due to greater availability of water, raptor nest sites on structures or artificial nest platforms, or by species that utilize disturbed sites with low cover (mountain plover) or early seral plant communities. These impacts will continue into the future as energy development continues. Within established natural gas fields like CDC there would be additional roads, pipelines, and other facilities that would increase the amount of habitat loss and fragmentation. In wildlife habitat management areas, ACECs, WSAs, and core habitat for greater sage-grouse, habitat disturbance by energy development would not occur or would be limited in size and scale of disturbance to minimize impacts to wildlife.

Recreation occurs across the entire RFO, although the frequency of encounters with wildlife/T&E species is greater on larger blocks of public land and during the fall. Recreation results primarily in displacement of wildlife due to human presence and motor vehicles, and increased animal stress, energy loss, injury and/or mortality during hunting and fishing seasons. There has also been increased displacement as a result of more people collecting shed antlers during late winter and spring, which may occur when animals are weak and additional energy loss could be crucial to their survival. As a result, WGFD in some areas has restricted this activity between January 1 and April 30 to reduce disturbance to big game. Displacement is generally temporary and varies between species on the effect. More sensitive species like elk tend to stay further away from roads and people, and are more likely to move a greater distance when disturbed than species such as mule deer. Displacement is also more likely close to frequently used campsites than from short-term recreational activities. Recreational use next to isolated water sources in desert regions, particularly during drought, potentially has greater effects on wildlife displacement than where water is more abundant.

Vegetation treatments and wildfires remove and/or alter vegetation to a different seral stage, with varying species, production and structure. Although expansion of cheatgrass with wildfire has been well

documented in the intermountain West, this has not been documented in the RFO, and long-term recovery of native perennial species is occurring with managed livestock grazing. The change in plant communities following fire, chemical or mechanical treatments results in greater herbaceous cover and production and a release of mountain shrubs that respond more quickly to treatment than big sagebrush. This diversifies habitat for wildlife/T&E species and improves the health and area of wildlife rich habitats such as aspen woodland and riparian shrubland. There is also displacement of wildlife/T&E species during these events to adjacent untreated habitat, and to some degree there may also be mortality during wildfires and prescribed burns. Displacement of animals is short-term for species that make use of treated areas and longer-term for species that require mature shrub and tree structure that is replaced with the early seral plant communities. Impacts from vegetation treatments and wildfires are likely to decrease in the future due to higher costs, more limitations on conducting them, and policies to put out wildfires immediately in many areas.

Wild horses affect wildlife/T&E species and habitat primarily within the four wild horse herd management areas, although wild horses may periodically be found outside of these regions. Wild horses compete with wildlife/T&E for forage, water and space, and may alter habitat around high use areas (water sources). There may also be displacement due to management activities involving wild horses, such as during round-ups. Wild horse diets overlap more with elk during the summer when grasses are actively growing and plentiful, but overlap more with antelope and mule deer during the winter by utilizing shrubs (local fecal analysis data). When forage and water are in good supply and well distributed, the competition with other ungulates is low. However, during drought years when forage and water are less available, the competition between users is higher and animal displacement may occur. Since wild horses are the more dominant animal, they are less likely to be displaced by wildlife, although lack of water and competition between wild horses may lead to their displacement to other locations outside the herd management areas that would potentially affect wildlife in those locations in a similar manner. Impacts from wild horses upon wildlife and T&E species are likely to remain the same as long as AMLs do not change.

Competition with other wildlife primarily consists of overlapping use of forage, water and space and alteration of habitat that affects the species causing the alteration or other species which use the same habitat. Examples of competition for forage between wildlife species is documented locally and nationally. A WGFD report in 1992 following winter fecal analysis documented a 74% overlap in diets between antelope and mule deer using the same crucial winter range along Muddy Creek. Another WGFD study in the 1990's showed competition for forage (i.e. grass) between elk and bighorn sheep on Ferris Mountain. Recent studies have also shown competition between mule deer and elk using the same winter range. In terms of alteration of habitat, heavy utilization of shrubs and herbaceous species that result in changes in species composition, structure, production and potential for increase in invasive species such as cheatgrass, likely affect the use of these habitats by other wildlife species.

Fisheries habitat is directly affected by grazing animals and alteration of streambank vegetation, cover and stability, which influences channel morphology and water quality. Fisheries habitat is indirectly influenced by upland activities, such as grazing, industrial development, and recreation that may result in a higher potential for soil erosion and non-point source pollution into fisheries habitat from ephemeral channels if a moderate to severe weather event occurs. The use of best management practices for livestock grazing and industrial development is intended to minimize this potential for negative impacts to fisheries habitat, as well as riparian/wetland health and water quality. Photos and other monitoring show vast improvement in riparian and fisheries habitat over the last 20 years following changes in livestock management. Improved reclamation and greater use of engineered road design with industrial development have also helped reduce sedimentation into fisheries habitat.

Weeds are primarily influenced by changes in the environment, primarily related to surface disturbance, but other events such as fire, flooding, and change in climate may also affect the status of weeds. The scale and intensity also influence the potential for weed invasion or expansion (which affect how fast the native plant community recovers) as well as the distance to weed sources and vectors for movement that includes animals, vehicles, water and wind. A variety of noxious and invasive weeds are present within the RFO, although there are currently no populations that are expanding rapidly (such as cheatgrass in other western states) or occupy large acreages of public lands administered by the BLM. Current management emphasis

is to identify and eliminate new populations, while controlling and where possible eliminate existing weed populations, with monitoring and treatment of weeds in locations where disturbance activities is occurring. However, the increase in vehicle use across the United States and distances driven increase the likelihood of weed transfer on vehicles or in mud attached to them that dries and falls off, to new areas and at more rapid rates than seen in the past.

Permitted activities, such as industrial development and livestock grazing, as well as off-road vehicle use, result in surface disturbance and the potential for weed invasion and/or expansion. Monitoring of rangelands by development companies, sub-contractors, permittees, county weed and pest, agency partners and the BLM is conducted with follow-up treatments where weeds are identified. Trailing of livestock would add to this potential for weed expansion at a minimal level to the other on-going activities on public lands.

Water Quality – Standard #5

Water quality within the RFO is primarily indirectly affected by permitted land uses such as livestock grazing and industrial development and un-permitted uses like off-road vehicle use and wild horses. These are also generally considered non-point pollution sources as the effects occur across the landscape and not from a single source like a factory. Current areas that do not meet the State of Wyoming's water quality standards are found on the WDEQ 303(d) list of impaired water bodies, and within the RFO they include: Muddy Creek (west of Highway 789, and between the confluence of Deep Creek and Youngs' Draw), lower Savery Creek, and the West Fork of Loco Creek. The middle two sites are not on public land and relate to irrigation and hay lands. The first and last sites include public lands and livestock grazing. The Muddy Creek area west of Highway 789 has had changes in livestock management in the past to primarily fall and winter use, is currently meeting proper functioning condition related to livestock grazing, and the WDEQ is working on a de-listing in 2014. Management of cattle grazing on the West Fork of Loco Creek is being changed to meet this standard. Use of best management practices have been used for a number of years for both livestock grazing and industrial development to minimize their impacts to water quality and improve areas that previously were degraded. However, there are still areas for improvement on some grazing allotments in terms of further adjustments to duration and/or season of use and in terms of road location, maintenance and construction relating to industrial development. As described above, wild horse populations are an indirect factor affecting water quality when numbers are too high relating in overuse of the vegetation that helps maintain soil stability. Use of best management practices (for all permitted activities) and the high level of attention given to this resource value would likely result in maintaining or decreasing impacts to this resource in the future.

The issuance of crossing permits described in the proposed action and added to the cumulative impacts described would have minimal effects on water quality. The crossing points used on both Muddy Creek and Savery Creek both involve bridges, that should not alter their current status on the WDEQ 303(d) list, and the West Fork of Loco Creek is not affected by trailing livestock. The continued use of best management practices should continue to improve upland and riparian habitat conditions, so that the RFO will meet State of Wyoming water quality standards.

Air Quality –Standard #6

Air quality in the RFO is directly affected by vehicle exhaust, industrial development, wildfires, towns, and agricultural practices, including methane gas from cattle. Livestock grazing, as well as use by wild horses and wildlife, also may affect air quality indirectly by reducing vegetation cover and increasing bare ground and the potential for wind erosion of soil surface particles and fine litter. Improved grazing practices that monitoring indicates downward trends in upland bare ground should also relate to improving air quality. Other practices such as improved fuel economy and reduced vehicle emissions, as well as improvement in human caused air pollutants is helping to reduce direct impacts to air quality. The impacts described are likely to be maintained in the future with BMP's implemented for permitted activities.

Recreation, Visual Resources

The expansion of industrial development continues to affect recreation and visual resources more directly than any other factor. Recreation is most often related to wildlife, and these developments may affect the location, numbers, and season in which wildlife are encountered. On the other hand, development has led to an increase in the number and condition of roads that improve the ability of recreationists to access public lands and wildlife. Industry infrastructure that is above ground, including battery tanks, compressor stations, wind towers, and powerlines, will nearly always affect visual resources. Certain practices such as changing location, color and height of facilities, and placing facilities within corridors may reduce affects to visual resources. Livestock use is primarily a factor to recreation and visual resources in how it affects the experience of the public lands user. When users encounter livestock defecation or livestock themselves during their recreational activity, the effect may be negative. Improvements in livestock management should reduce this impact, and in specific areas livestock are managed around recreational use to minimize these impacts. Vegetation treatments and wildfire usually have negative impacts to recreation and visual resources during the event or right after, primarily due to displacement of animals and the public land user. These effects disappear over the course of time as vegetation recovers, wildlife return, and the public land user adjusts to the new vegetative environment. The issuance of livestock crossing permits should have minimal additional effects on recreation and visual resources, both due to the location of most trailing along established roads (rather than cross country where wildlife are more likely to be found) and since passing through a herd of cattle in a vehicle is an experience most people don't see anymore, so it is often viewed as a positive rather than a negative experience.

Land with Wilderness Characteristics

Lands with Wilderness Characteristics are protected by law from disturbance by permitted actions, no matter their source, and present-day landscape characteristics and trends would continue without any additional disturbance from trailing cattle.

Cultural Resources

Evaluation of new permitted uses on public lands, as well as renewal of existing uses, would continue to protect and/or minimize impacts to cultural resources. This includes consultation with the State Historic Preservation Office (SHPO), avoidance of identified sites, and documentation and mitigation of impacts where necessary and approved. The issuance of crossing permits would have minimal additional impacts to cultural resources, primarily due to their locations along roads where multiple disturbances occur and since these locations are not affecting any identified cultural sites.

Grazing Resources

The cumulative impact analysis area includes all of the grazing allotments within the RFO, where livestock use is permitted on public lands administered by the BLM. The total permitted use level in the RFO is 449,585 animal unit months (AUMs) with an average actual use of 61% or 276,277 AUMs between 2001-2010. This crossing use would add a very minimal increase (about one-half percent or less) in forage use (AUMs) from livestock when coupled with the permitted grazing in each allotment. Sheep trailing also often occurs early in the spring or late enough in the fall when cattle in allotments are not present, and these routes are for the most part different routes than the cattle use, which reduces the potential for forage competition. Normally permitted livestock use in allotments along with crossing use would be evaluated in completing rangeland health assessments. If crossing use was determined to be a factor in not meeting one or more of the rangeland health standards, then recommendations in management practices to achieve the failed standard(s) would be incorporated into future authorizations of crossing use. Grazing resources would be negatively impacted as a result of the no action alternative. Livestock operators would have to alter their trailing routes to not include unassigned BLM lands, and/or truck and trailer their cattle herds to their assigned allotments. The checkerboard RFO land ownership pattern, in combination with the amount of actual BLM land within the RFO, would make altering trailing routes very difficult, as in many areas it would be impossible to avoid crossing public land. With the continuation of implementing BMPs for grazing, impacts from livestock grazing are likely to decrease as they have over the last 20-40 years.

Wild horses and wildlife compete with livestock for forage, water and space. Competition for resources becomes more of an issue during drought periods and when populations of wild horses or big game wildlife are higher. Competition between wild horses and cattle is primarily close to water sources and in the summer and fall when water is scarcer. Since the majority of livestock use is made with cattle which prefer grasses, competition with wildlife is primarily with elk which also prefer grasses. This is more likely to occur where elk congregate, either in spring calving habitat or crucial winter range. When elk numbers are high it usually results in elk use on private hay meadows, and more information is needed to document the scale and degree of cattle/elk competition and how it relates to site specific vegetation objectives and management.

Industrial development affects livestock management in locations where it occurs, whether it involves oil and gas, minerals, wind farms, powerlines, pipelines, roads, or other activities. Within these locations there may be disturbance or displacement during development that becomes more of a minimal effect later during production or maintenance activities, as well as forage loss due to the actual site disturbance. On larger projects this may result in short-term loss of vegetation on 10-15% of the landscape, that with reclamation would be reduce to 5-10 long-term loss of vegetation until final reclamation occurs. Forage palatability and utilization may also be reduced downwind from roads and facilities due to dust settling on vegetation. Other negative impacts to livestock include loss of animals to poisonous plants where weed control in disturbed locations is not adequate, and additional time spent in managing animals when they move to other locations across un-maintained cattleguards or fences/cattleguards that have been damaged or let down during development activities. Industrial development also provides benefits to livestock operations. Improved road systems allow better access to country during poor weather in order to move livestock in or out, check for health or water availability, put out supplements, etc. Water wells developed by industry are often shared or turned over to livestock operators to use. Short-term reclamation often results in greater production of grasses that benefits cattle (and sheep to a lesser extent). These impacts will likely continue in the future with continued development of energy resources in the RFO.

Wild Horses

Wild horses are affected by competition for forage with livestock and wildlife, crossing use by sheep operators, and by disturbance and possible displacement as a result of human activity, whether it is for livestock management, industrial development or recreation. Wild horse diets overlap more with cattle and elk during the summer when grasses are actively growing and plentiful, but overlap more with sheep, antelope and mule deer during the winter by utilizing shrubs (local fecal analysis data). When forage and water are in good supply and well distributed, the competition with other ungulates is low. However, during drought years when forage and water are less available, the competition between users is higher and animal displacement may occur. Since wild horses are the more dominant animal, they are less likely to be displaced by livestock or wildlife, although lack of water and competition between wild horses may lead to their displacement to other locations. Trailing of sheep occurs along roads on the east and west ends of the Adobe Town WHMA for several days in the spring and fall, generally before or after severe winter conditions occur. This would add very minimally to the competition for forage with wild horses. These impacts will likely continue into the future as long as the AML remains the same.

Human activity within WHMA's does occur at varying rates and location depending on the specific activity. Winter sheep grazing involves animal herding on a daily basis, while summer cattle grazing involves herding once or twice a month on average and more frequent checking of water wells up to every other day. Livestock management usually involves pickup trucks and horse trailers the majority of the time. Industrial development involves oil and gas resources, including exploration, pad and road construction, drilling, pipelines and reclamation, and long-term monitoring and maintenance. This activity can involve multiple vehicles of various sizes, spread over several months to year-round. Current mineral development occurs on less than 5% of the Stewart Creek WHMA, 20-30% of the Lost Creek WHMA, and 50-60% of the Adobe Town WHMA. Recreational viewing of wild horses does occur, as well as visitor use to the Adobetown Wilderness Study Area also occurs, both primarily in the spring through fall periods. However, the highest recreational use period is during the fall hunting seasons for big game. These uses involve pickups and SUV's to a lesser extent (on better roads). The overall effects of human activities

upon wild horse distribution and use areas is not known, although this factor and water source distribution and availability are the two most likely known influences in these areas.

Cattle trailing impacts the Adobe Town WHMA in two locations along its boundary, and would add minimal impacts to wild horses, in addition to those described above.

No Action Alternative

Under the **no action** alternative the following impacts would occur:

Under the no action alternative, the identified cattle trailing routes would not be permitted via "crossing permits" within the BLM RFO. Livestock may still be trailered or trucked to individual allotments, but the process of actually walking livestock across BLM land, not assigned to the livestock owner/operator, would not be permitted.

Soils/Watershed Health – Standard #1

Watershed health would continue to follow current trends. Livestock and wildlife would continue to utilize the landscape for grazing/browsing and migratory wildlife herds would continue to impact select soils and watershed heath in areas of dense movement (i.e. locations were elk herds cross streams). As a result of the no action alternative, it would be necessary to improve identified two-track roads and construct additional livestock working facilities to mitigate the use of tractor trailers for the purpose of transporting livestock. These improvements would result in increased soil disturbance, and potential soil movement throughout the watershed.

Riparian/Wetland Health – Standard #2

Concentrated livestock and wildlife use around existing riparian areas, would continue as these areas typically provide more palatable forage, water nearby, and sometimes shading, that are sought after by both wildlife and livestock. While riparian areas would not be directly impacted by trailing livestock under the no action alternative, they would be subject to similar impacts from migratory wildlife, resident wildlife, and permitted livestock use.

Early spring and late fall livestock transport would require the need to clear snow, and or plow roads for the purpose of gaining access to assigned allotments with trucks and trailers. These impacts would alter some riparian flows, and/or increase sediment loads to riparian systems resulting from additional soil disturbance. The use of roads during wet soil conditions would channel flows (i.e. precipitation, and snowmelt) within road ruts, increasing soil movement into riparian areas, and increase maintenance needs to road networks.

Upland Vegetation – Standard #3

Management on existing grazing allotments, as a result of the no action alternative, would continue under present day trends. Upland vegetation would continue to receive use from grazing/browsing wildlife and livestock. While upland vegetation would not receive elevated use from trailing cattle under an issued crossing permit," it would be subject to trailing cattle use from operators moving livestock to and from adjacent allotments where they have assigned preference.

There would be some lose to upland vegetation under the no action alternative, resulting from the improvement of two track roads and the construction of additional livestock working facilities (i.e. corrals). Resulting disturbance would create new areas susceptible to weeds invasions, and additional soils loss.

Wildlife/TE&S Species – Standard #4

Wildlife and RFO associated TE&S species would receive no additional disturbance/impacts as a result of livestock trailing, under the no action alternative. The no action alternative would require the use of additional motorized equipment for the purpose of transporting livestock, temporarily displacing wildlife. As opposed to trailing an entire herd of livestock through and area in a short time span, the activity of

trucking livestock would require multiple pieces of equipment, and/or trips to be made prior to relocating an entire cattle herd. The process of transporting livestock with truck and trailer would increase disruptions to wildlife, and increase the potential for wildlife mortalities resulting from vehicle collisions.

Water Quality – Standard #5

Under the no action alternative water quality trends would continue as a result of existing impacts to and adjacent to riparian areas. Road improvements, for the purpose of transporting cattle, and their use during wet soil conditions by heavy equipment, would result in additional sediment loads to watersheds. These impacts would be mitigated by proper water movement practices (i.e. wing-ditches, water bars, and reclamation/re-vegetation) post construction.

Air Quality – Standard #6

Under the no action alternative air quality would not be impacted by trailing cattle. The use of motorized equipment, resulting from the no action alternative for the purpose of moving cattle, would result in the additional release of emissions from fossil fuels, and an increase in particulate when driving on dry dusty road conditions, however, air quality would be expected to continue to meet state standards under current trends and conditions.

Recreation, Visual Resources

Under the no action alternative there would be no immediate effects to current recreational opportunities or the VRM Class of any identified RFO landscape as a result of cattle trailing.

Land with Wilderness Characteristics

Under the no action alternative present-day landscape characteristics and trends would continue void any additional disturbance from trailing cattle.

Cultural Resources

Under the no action alternative there would be no additional impacts to cultural resources resulting from cattle trailing issued with crossing permits.

Grazing Resources

Grazing resources would be negatively impacted as a result of the no action alternative. Livestock operators would have to alter their trailing routes to not include unassigned BLM lands, and/or truck and trailer their cattle herds to their assigned allotments. The checkerboard RFO land ownership pattern, in combination with the amount of actual BLM land within the RFO, would make altering trailing routes very difficult, as in many areas it would be impossible to avoid crossing public land.

Impacts of this action would apply additional financial burden on livestock operators that trail cattle, resulting in a reduction in management flexibility. Trailering/trucking cattle to and from allotments is expensive and many operations cannot afford to purchase said equipment, and would be at the mercy of scheduling trucks to ship livestock to and from allotments, resulting in additional constraints in their management. As a result operators would have less working capital to place into new rangeland improvements and/or the maintenance of existing ones (i.e. fence lines, stock watering developments, and pipelines). Some permittees/lessees may not be able to access their allotments by vehicle and would therefore be unable to use their permitted use.

The no action alternative would also impact current permit/lease use dates. If livestock owners are not permitted to trail cattle into their assigned allotments, then as a result of trucking/trailering cattle, use dates would have to be moved to later in the season when access to their allotments is not affected by winter

snow loads, or spring snow melt. Moving use dates to later in the season would result in greater amounts of growing season use, thus, having greater impacts on vegetative seed production, and ultimately decreasing plant vigor and diversity.

Wild Horses

Under the no action alternative, there will be no new impacts to wild horses, resulting from issued cattle crossing permits.

Description of Mitigating Measures and Residual Impacts

Additional mitigation measures required beyond those provided or requested by wildlife, recreation, and/or cultural specialists under the proposed action would not be required.

Monitoring

The identified trailing routes addressed in this analysis would be monitored by the BLM to ensure compliance during cattle crossing.

Other Personal/Agencies Consulted:

The scoping process resulted in consultation/contact with:

Rawlins Field Office assigned grazing permitees/lessees
Saratoga, Encampment, and Rawlins Conservation District
Medicine Bow Conservation District
Little Snake River Conservation District
Wyoming Department of Agriculture

Mark Goertel	BLM, Wyoming State Office, Rangeland Management Specialist
Joel Humphries	BLM, RFO Wildlife Biologist
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David Hullum	BLM, RFO Recreation Specialist
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Preparer: _____ **Dates:** _____

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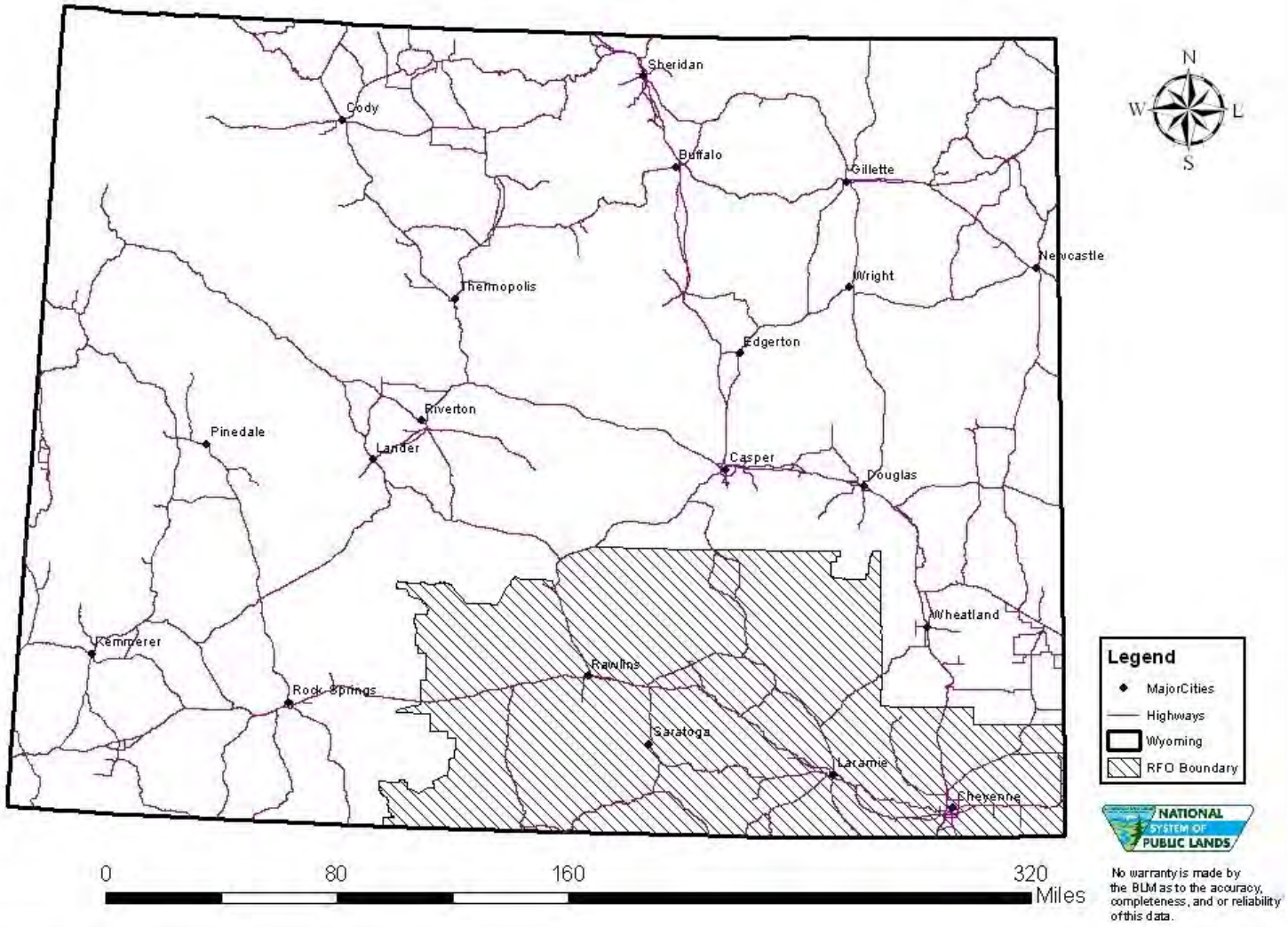
Rawlins Field Office Boundary - MAP#1



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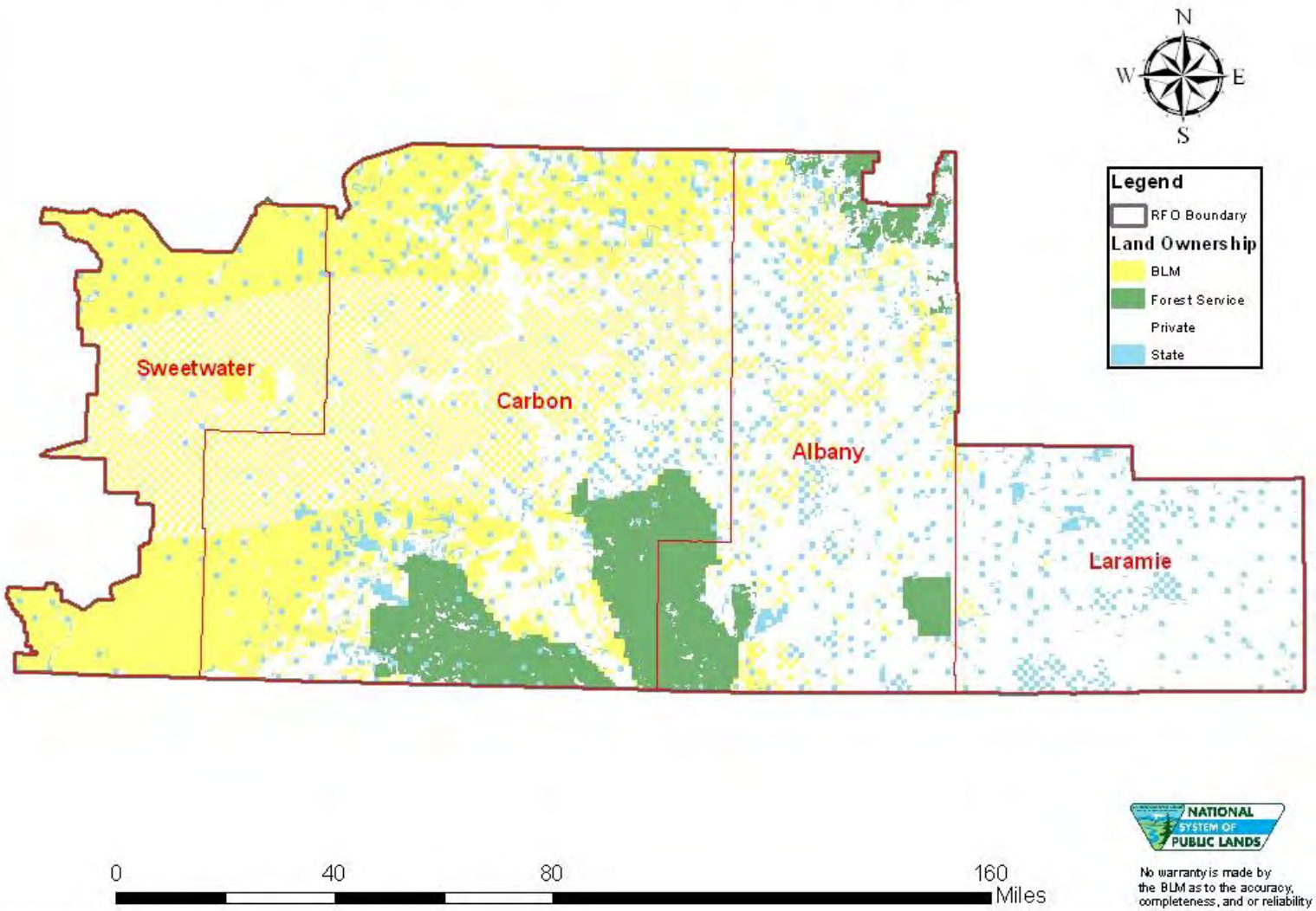
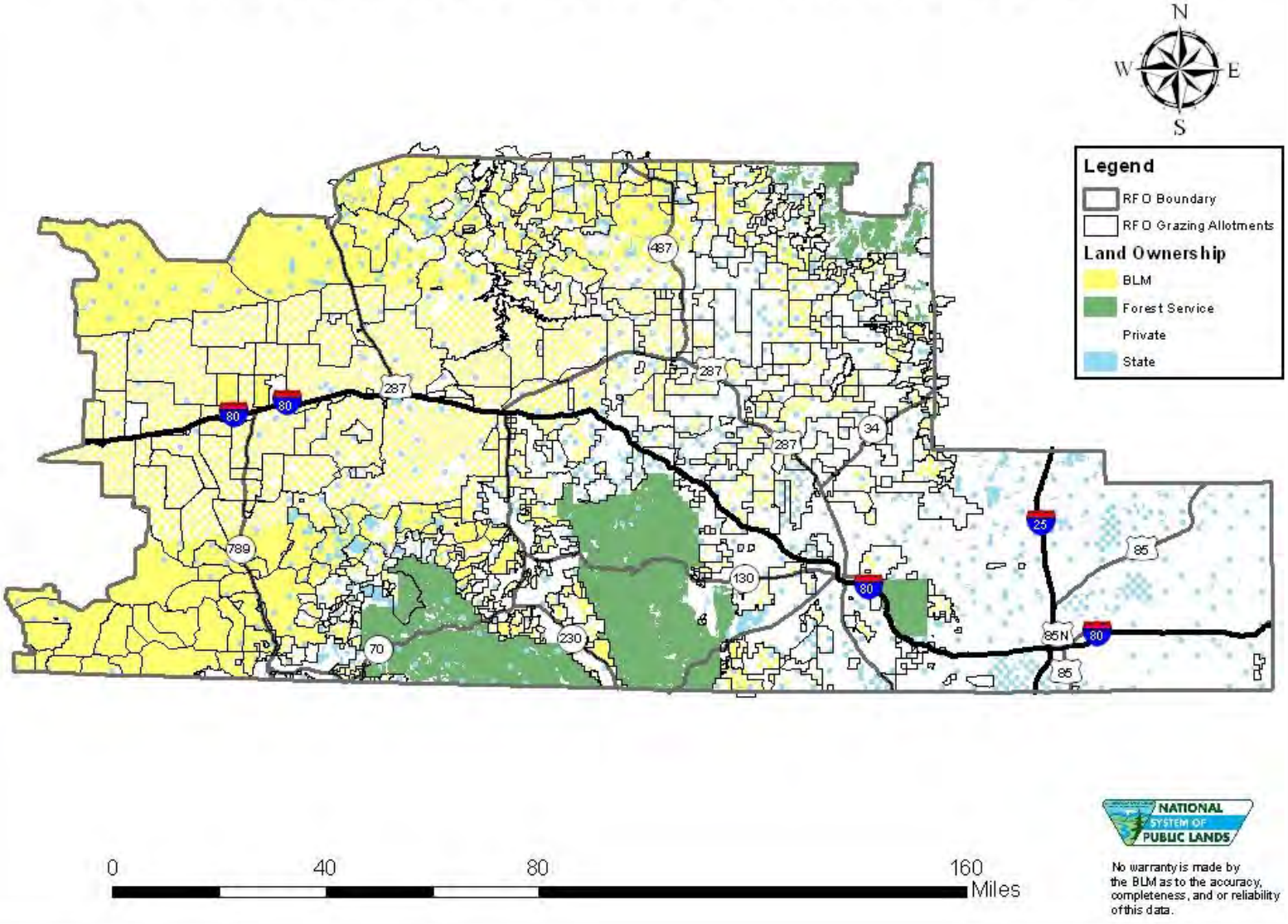
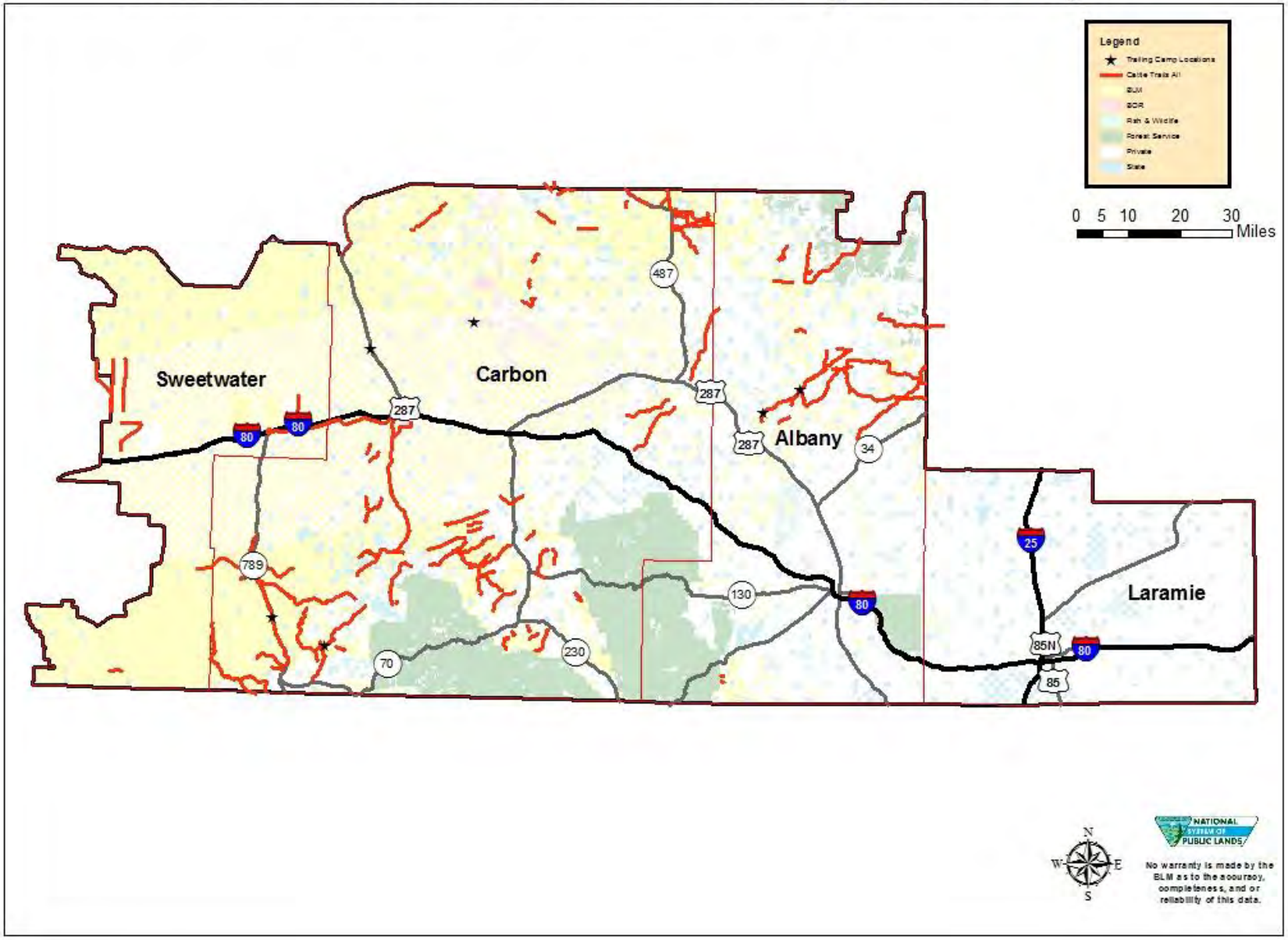
Rawlins Field Office Land Ownership Pattern - MAP#2



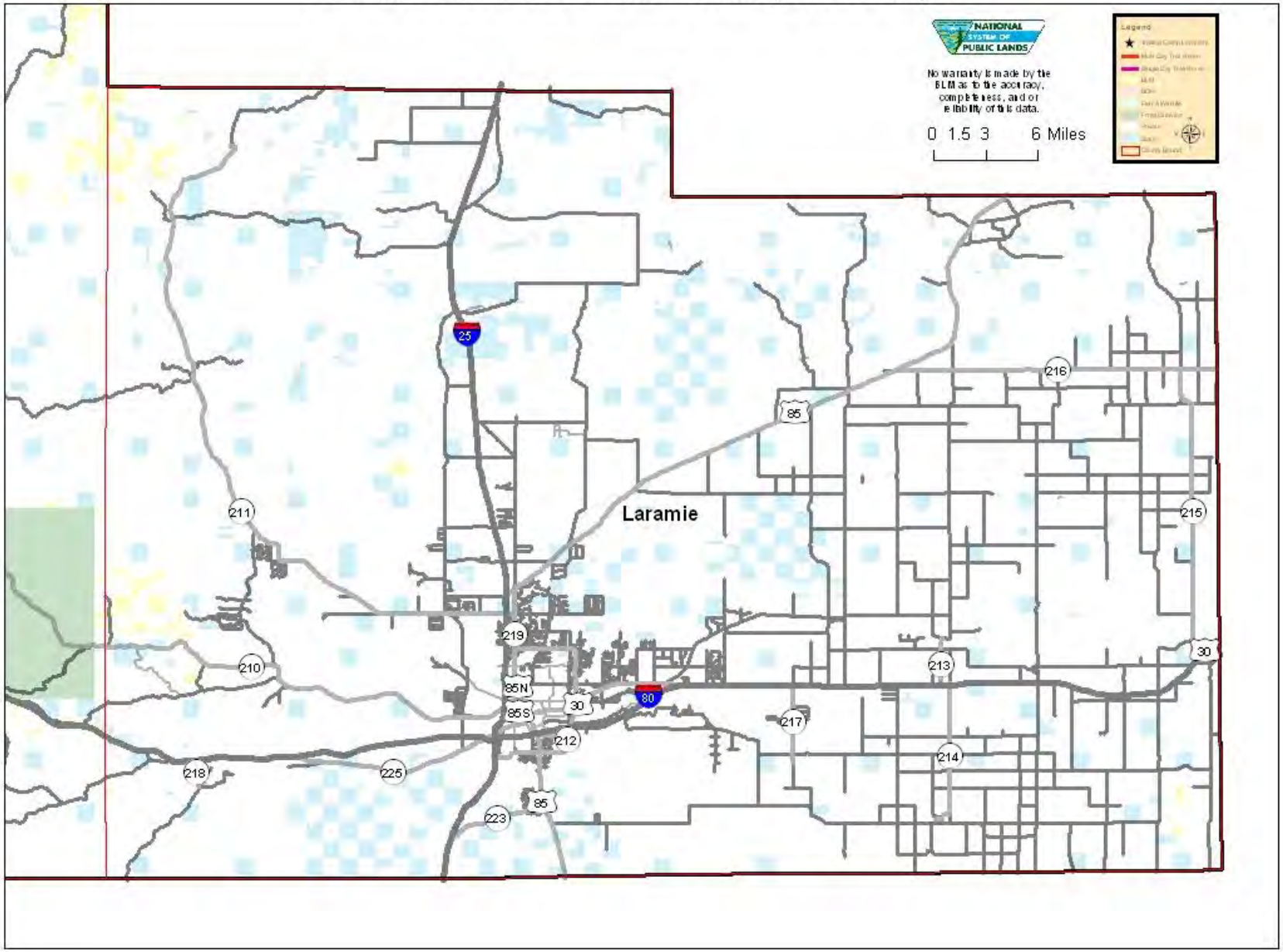
Rawlins Field Office Grazing Allotments - MAP#3



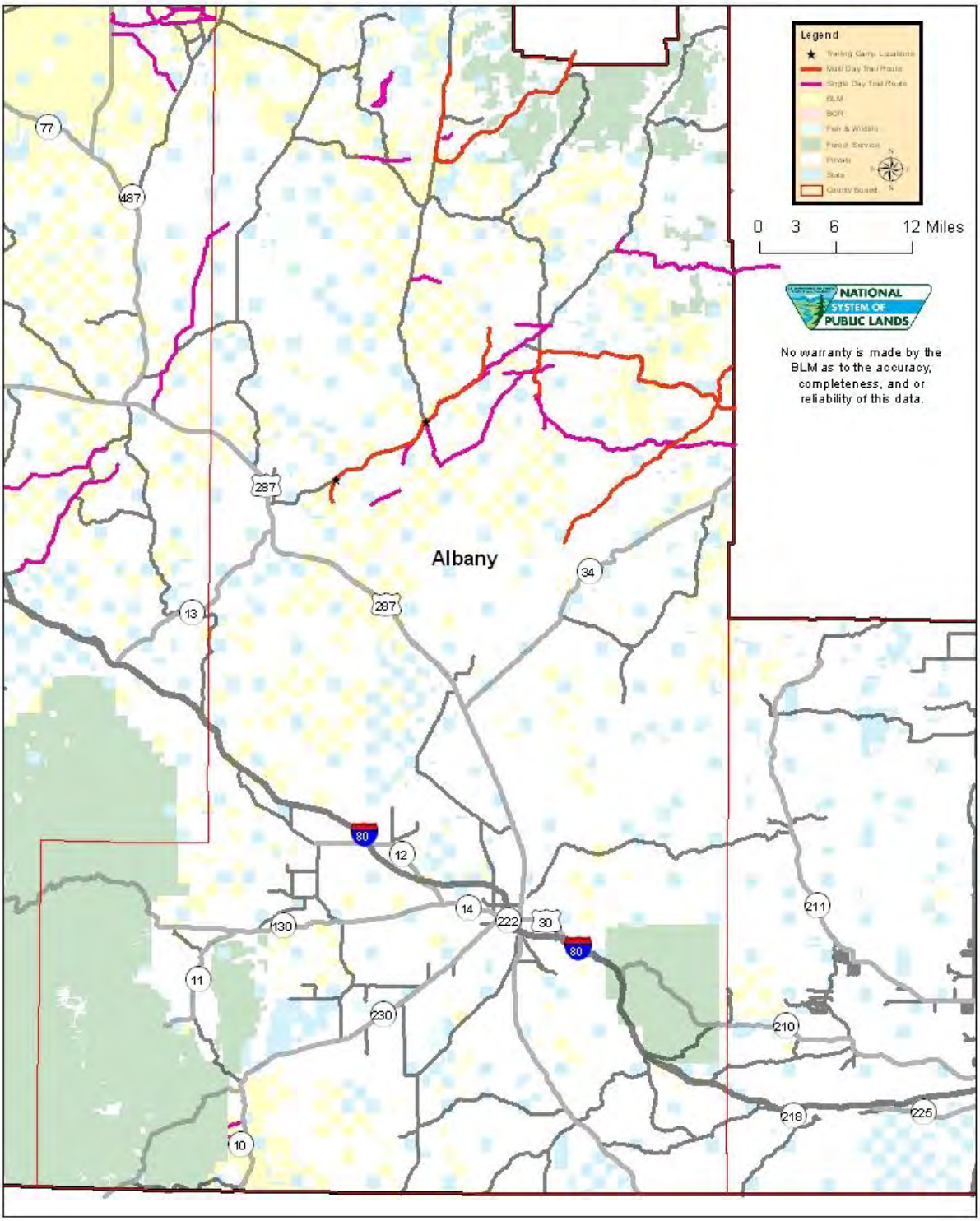
Rawlins Field Office Identified Trailing Routes Map #4



Rawlins Field Office Identified Trailing Routes Map #5



Rawlins Field Office Identified Trailing Routes Map #6



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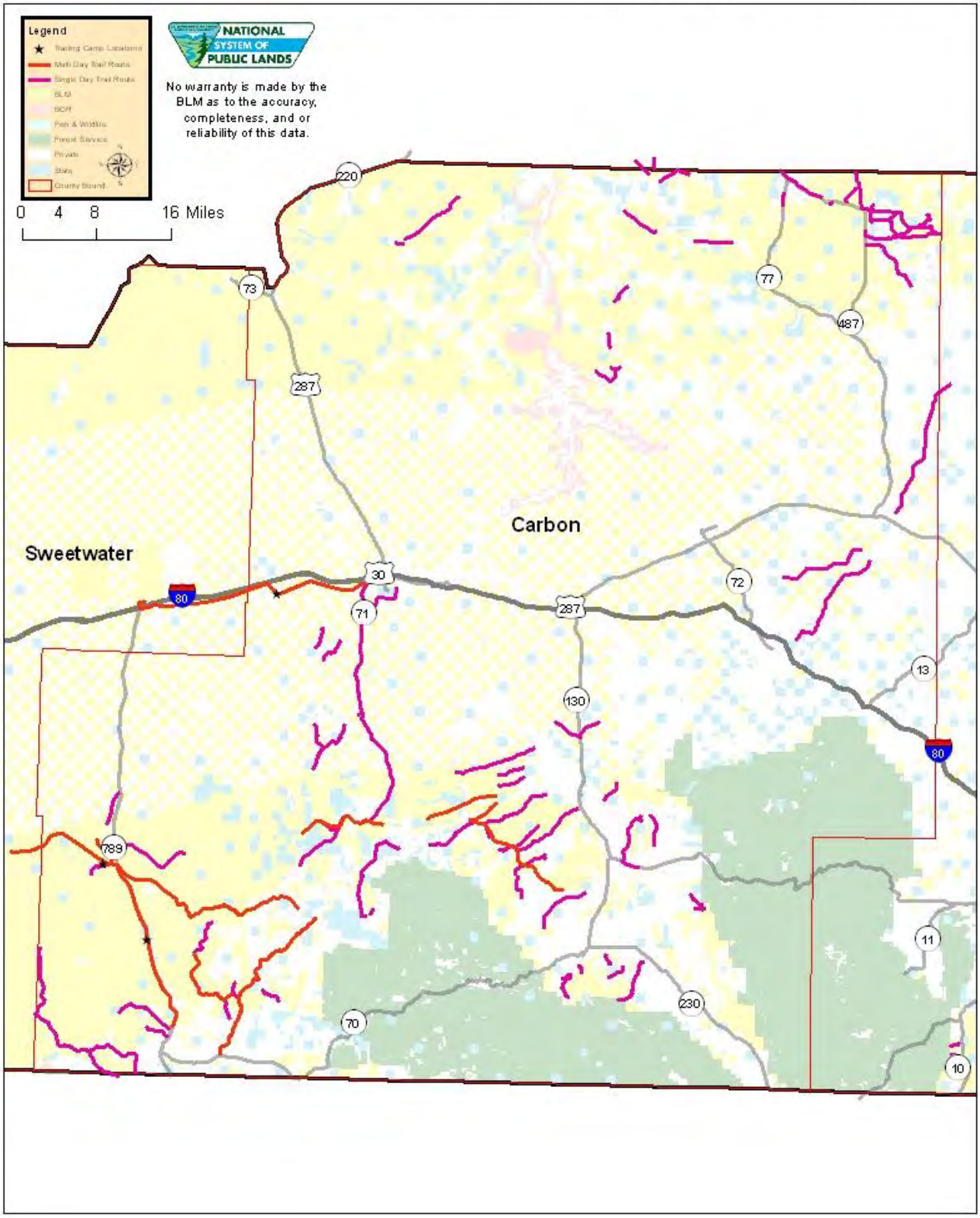
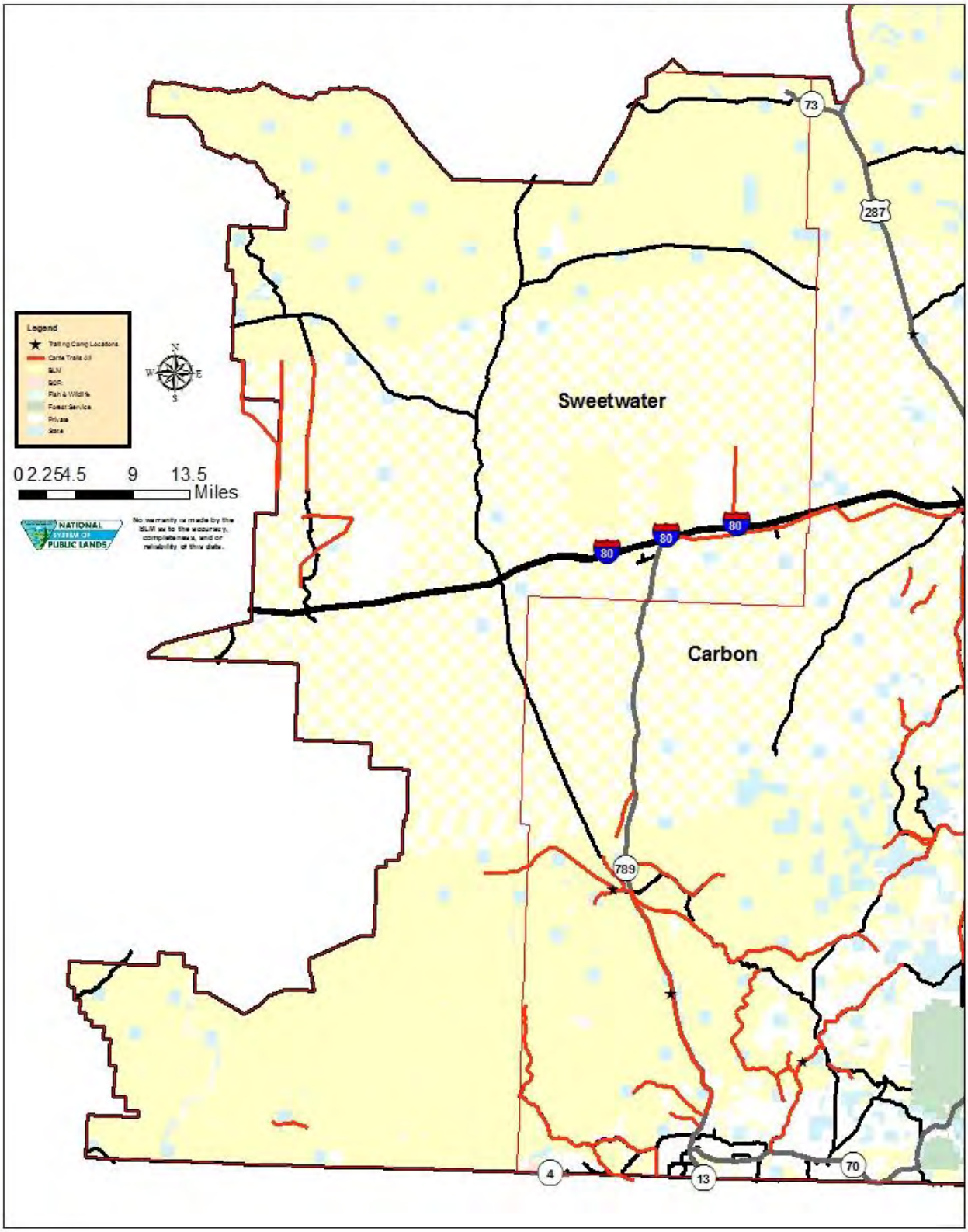
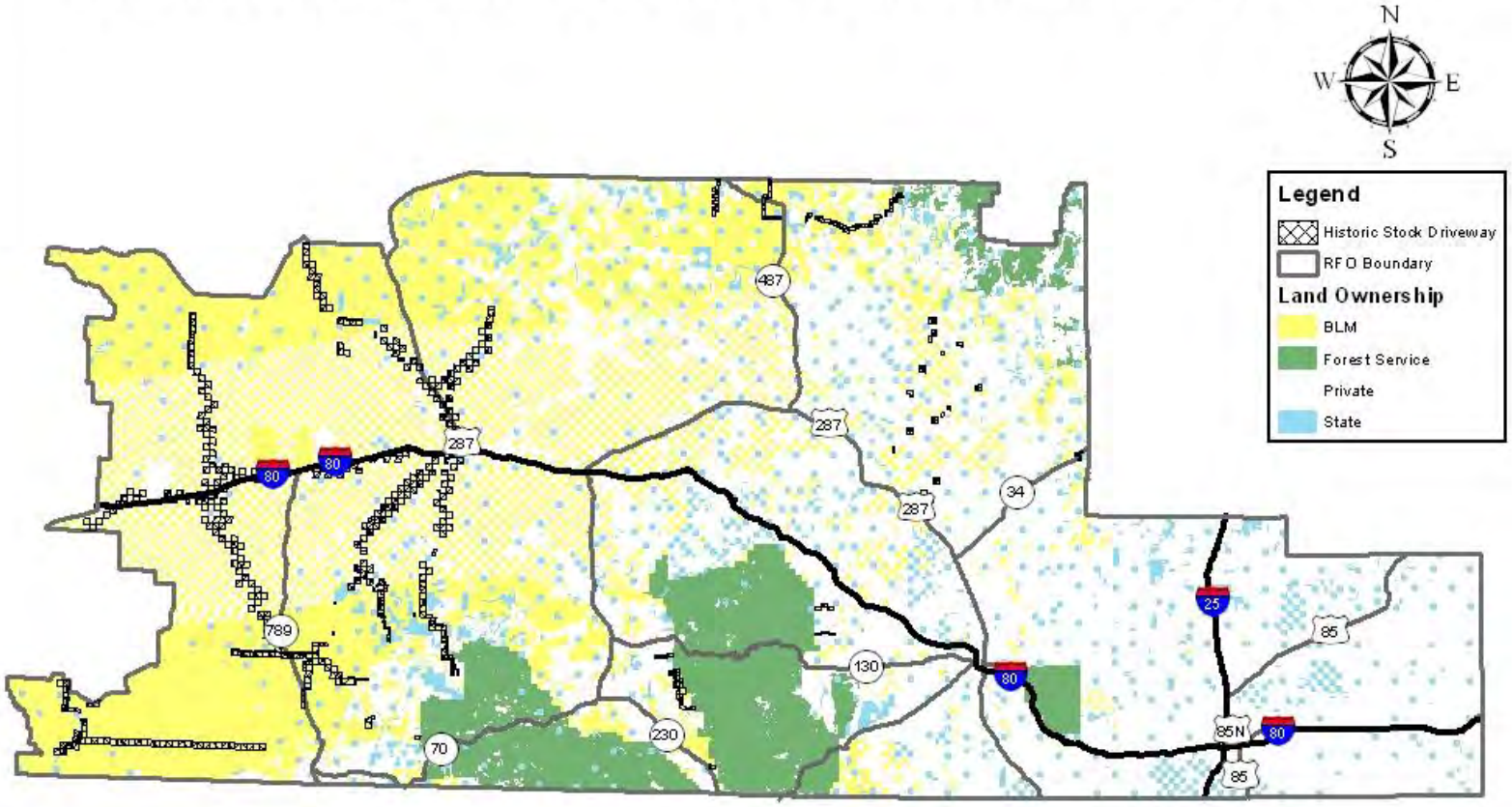


Rawlins Field Office Identified Trailing Routes Map #8



Rawlins Field Office Historic Stock Driveways - MAP#9



0 40 80 160 Miles

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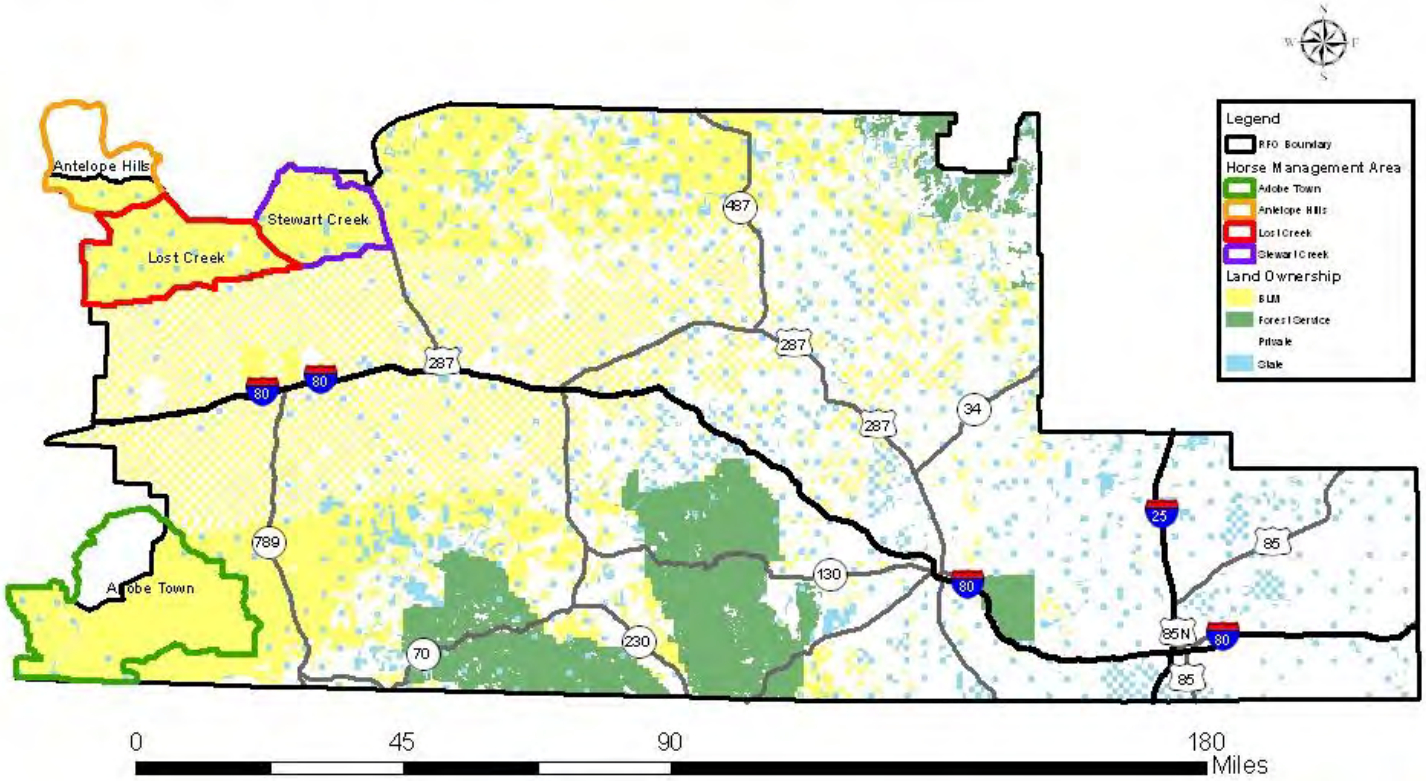
Rawlins Field Office Wild Horse Management Areas - Map#10



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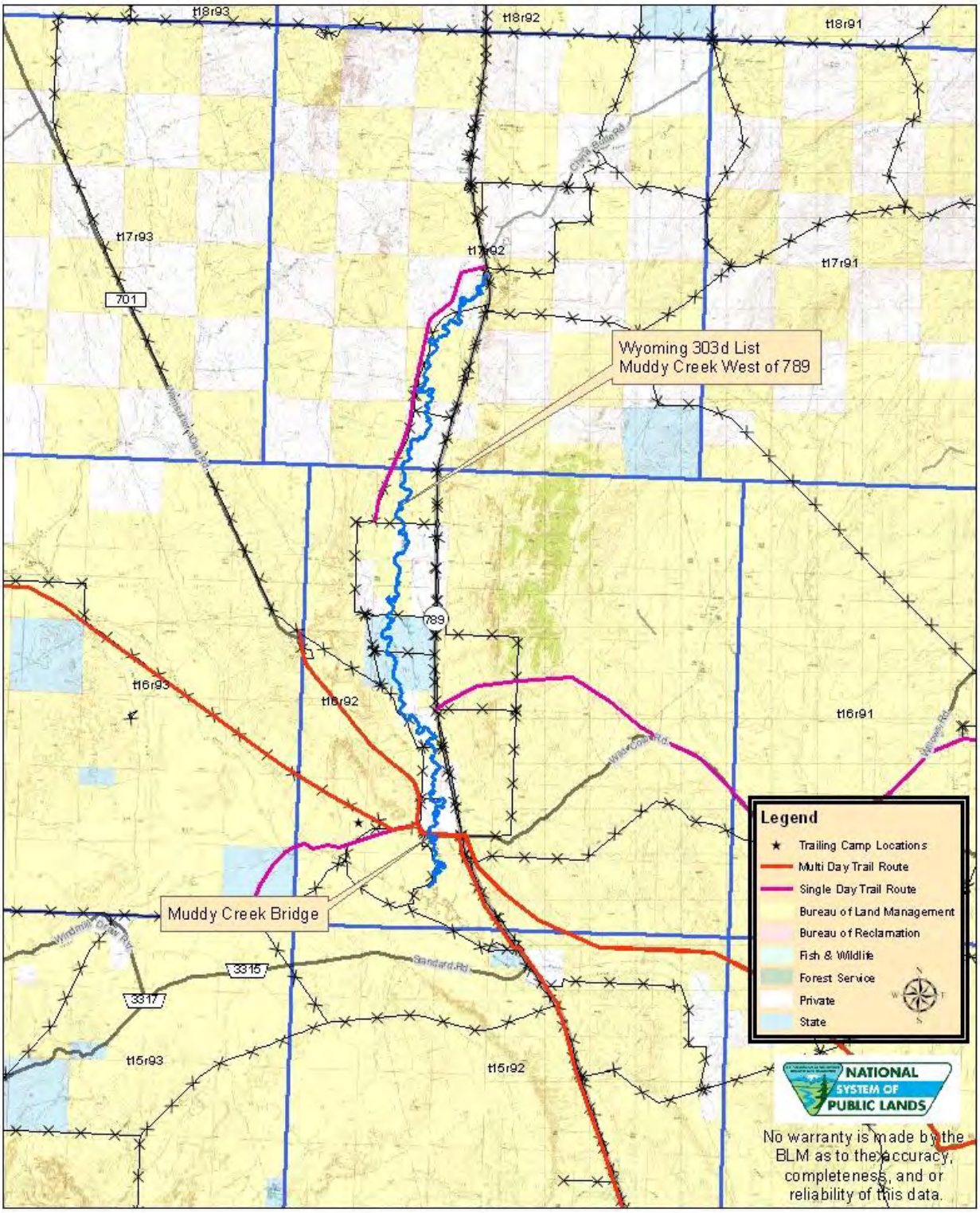
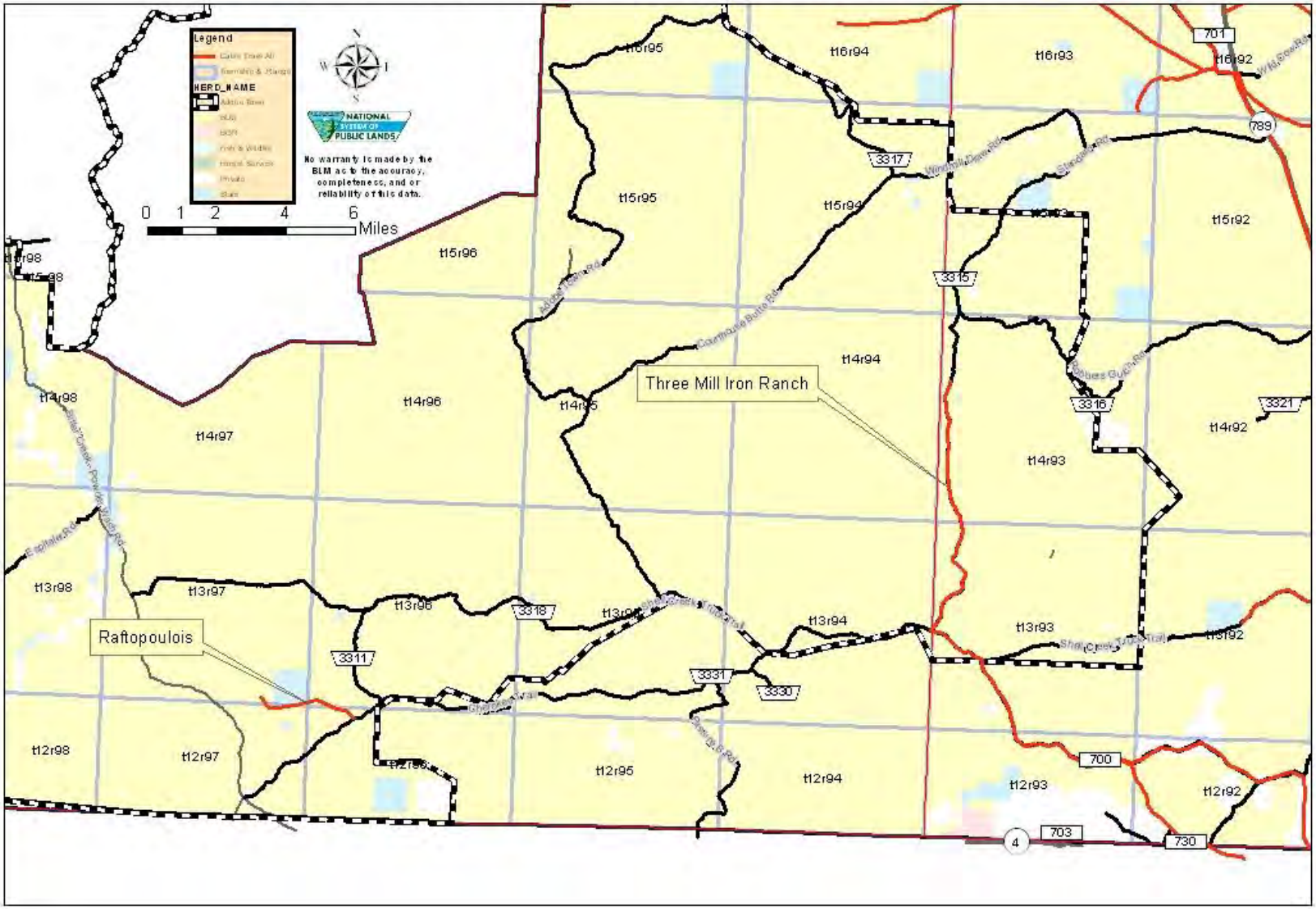
Muddy Creek "303d" Trailing Routes Map#11



Adobe Town HMA Cattle Trails Map#12



Appendix #1 - RFO Grazing Allotments						
Allotment Number	**Allotment Name**	**Public Acres**	**Public Aums**	**Other Fed Acres**	**Private Acres**	**State Acres**
00301	PATHFINDER	9335	1081	2701	6503	1920
00302	LITTLE CANYON CREEK	1424	165		720	
00303	CANYON CREEK	5340	857		3680	3400
00304	WAGON TONGUE	775	123		8	640
00305	CAMP CREEK	3217	706		4040	1440
00306	KIRK RANCH	3395	365		404	1306
00307	BATES HOLE	14381	2085		6094	1722
00309	MOSS AGATE	6355	986		85	548
00310	ANTELOPE SPRINGS	2977	380		40	
00311	BATES BENCHMARK	4262	611		720	1360
00312	7E RANCH	8845	1370		4888	640
00313	WEST LITTLE MEDICINE	6922	1267		40	640
00314	MINE	4050	679		5705	130
00315	INDIAN SPRINGS	2851	433		2071	
00316	DRY CREEK RIM	12420	2564		3616	1866
00317	UPPER DRY CREEK	5712	1095		1470	580
00318	SHIRLEY RIDGE	7693	1048		680	640
00319	EAST LITTLE MEDICINE	3141	746		9710	520
00320	LEO	9121	659	2327	2993	640
00321	DRY CREEK	9861	1259		4520	640
00322	SPRING CREEK	10387	1912		2904	640
00323	BLACK CANYON	11067	1814	3288	3020	1082
00324	PALMER-NELSON	4241	898		2830	680
00325	CADY	185	20		148	
00326	BEAVER CREEK	2385	395		3464	358
00327	SCHOOL SECTION	816	125		95	609
00328	SULLIVAN	108640	18491		69275	14738
00329	LOST CREEK	2895	450			43
00330	HOUSE GULCH	2395	631		1446	481
00331	UPPER LOST CR.	589	103		163	
00332	THORNTON PLACE	2852	374		8	
00333	SOUTH BENNETT N	3466	297	1059		
00334	CORRAL CREEK	5710	1193		1000	1120
00335	SHIRLEY MOUNTAIN	18308	3655		12256	1920
00336	MUD SPRINGS	1193	466		1520	95

00337	PETRIFIED FOREST	8311	1423		3942	600
00338	ANDA	9184	1691		4363	624
00339	GRASSHOPPER	40	10			
00340	HORSE SPRINGS	5228	1056		3377	2919
00349	PEDRO MOUNTAINS	3405	359			
00350	LOST CREEK RANCH	166	18		885	
00401	AIRPORT	840	249			640
00402	ANTELOPE	1394	319		1480	80
00403	BAGGS SUB UNIT	1178	144	2163	1954	
00404	ANTELOPE DRAW	3986	333			
00405	BEAVER DAMS	3565	682		480	1342
00406	BODEN	1695	189		1365	738
00407	CENTENNIAL CR.	2776	233		98	598
00408	CHEROKEE	63956	9144		3698	3692
00409	COTTONWOOD DRAW	2111	360		706	640
00410	COYOTE DRAW	4376	472		53	
00411	CUSHING	5653	1278			84
00412	DEEP GULCH	25031	3336	126	3891	4330
00413	DIRTY MAN	228	20		560	
00414	DISH	15700	4262		2400	2330
00415	DOTY MOUNTAIN	56238	7320		22325	1280
00417	GRIZZLY	27533	6112		1226	9332
00418	HARTT CREEK	3067	940		3957	920
00419	JACK CREEK	1030	416		5818	1811
00420	LITTLE JACK CREEK	2244	307		1009	975
00421	MCCARTY CANYON	3104	465		1095	5081
00422	METHODIST	4591	1476		867	1095
00423	MIDDLEWOOD HILL	14347	1184		104	3072
00425	MORGAN CREEK	4060	1331		4639	1715
00426	MORGAN RANCH	1695	263		1161	236
00427	NORTH SPRING CREEK	227	25		1449	
00428	CHEROKEE CREEK	866	137		3095	665
00429	RICH	5875	1158		175	
00430	SAGE CREEK	13763	4552		8724	6946
00431	SAVERY CREEK	2725	606		4991	766
00432	SNOW CREEK	5249	1278			
00433	SULPHUR SPRINGS	12832	2096		8291	640
00434	TWIN GROVES	200	20		6645	965
00435	WILD COW	7359	1760		789	813
00436	WINDMILL	3264	661			520
00437	HILL ISO TR	140	30			

00438	SPRING CR ISO TR	200	30		1400	
00440	BARTLETT ISO TR	425	71			
00441	NORTH PASTURE	400	57		120	
00442	DAD	708	111			18
00443	EAST MUDDY	5497	709		646	20
00444	TRUCK DRIVERS CREEK	170	30			
00446	ANTELOPE ISOLATED TR	120	23			
00448	J O PASTURES	1271	399		647	
00449	COZY CANYON RANCH	40	5			
00450	STANDARD	11626	3530		1010	640
00451	JIM BERGER	657	91			
00453	THOMAS RYAN	371	53			
00456	DEEP CREEK PASTURE	2659	365		4945	390
00457	WEST WILD COW	3502	437			333
00505	CHEROKEE TRAIL	11176	1338			
00514	LITTLE ROBBER	480	250			
00605	DALEY RANCH	11305	930		13498	1280
00606	DOOLITTLE	280	90		390	
00687	SMILEY DRAW	1345	226		2195	
00688	UPPER SAVERY CREEK	340	41		646	
00689	WEST LOCO	120	30		760	40
00690	COTTONWOOD CREEK	200	34		4840	
00699	MIDDLE CEDAR CREEK	184	40			640
00701	BELL SPRINGS	4506	346		4388	
00704	EAST SINCLAIR	900	83		3151	
00705	RED DESERT ALLOTMENT	22580	1960		23511	640
00706	G.L.	9426	1268		9695	
00707	HAYSTACK	36339	3783		41284	1920
00708	HAYSTACK RIVER PAST	840	78			640
00709	JAWBONE	11560	1326		11568	
00710	MONUMENT DRAW	15417	1834			
00711	MONUMENT LAKE	58453	7555		59665	1970
00712	THAYER	286	29		2000	
00713	NORTH CRESTON-WEST	10871	1938			
00714	LATHAM	19580	2492		19693	640
00715	NORTH TIPTON	12256	1334		13221	640
00716	NORTH WAMSUTTER	28143	2935		28384	640

00717	RUBY KNOLLS	15355	1625		14811	
00718	SANDSTONE	38074	4072		45298	1881
00719	SEPARATION RIM	11054	938	40	9921	20
00723	SHAMROCK PASTURE	61	2		1942	483
00726	RYAN ROCKS	635	78			
00727	TZ RANCH	40	7		102	
00730	BEAR CREEK	77	15		422	
00731	WHEATLAND ROAD	80	17		360	
00732	MIDDLE SYBILLE CREEK	37	8		104	
00733	SOUTH FORK CANYON CREEK	1816	350		3195	640
00739	HIGH SAVERY	561	140		2221	610
00740	GRIEVE PASTURE	1059	88		659	450
00741	BROWNS CANYON	11779	1025		11191	640
00746	DOLLING RANCH	3224	487		2649	2912
00748	BOOT HEEL SW	3113	625		2531	
00751	ELK CREEK	6602	625		2512	
00756	COYOTE SPRINGS	22245	2945		21293	
00800	DIFFICULTY	8000	1242		12200	
00801	LARSON KNOLLS	5117	616		5118	
00802	TENNANT PLACE	130	18		320	
00803	WEST ANSCHUTZ	8248	1428		14559	2040
00805	EAST SEMINOE	1207	95	699		
00806	SCHNEIDER RIDGE	2867	212		1103	
00807	SOUTH LEO	16744	2263	1967	23494	1025
00808	T. E. RANCH	1608	268		4919	246
00809	MEDICINE BOW	794	49		7671	620
00811	ELLIS BLOCK/PETESGAP	13830	1591		17844	1011
00812	FREEZEOUT	520	73		562	
00813	VANDIVER DITCH	1297	165		1085	
00814	T B FLATS D.M.	1000	162		2507	
00816	FT STEELE BREAKS	9419	790		9447	80
00817	LITTLE MEDICINE	1472	341		11861	640
00819	NORTH WALCOTT	31768	3088	655	36897	1360
00820	QUEALEY BLOCK	23681	3558	3067	26954	560
00821	SOUTH SEMINOE	1900	527	390	3044	
00822	DANA BLOCK NORTH	26713	4520	3067	35523	1280
00824	NORTH AREA	4078	442		8715	1920
00825	SLATE RIDGE	4931	723		11236	640
00826	ROBBERS ROOST	2027	333		7093	640

00827	PASS CREEK RIDGE	26308	4833		33328	360
00828	WILSON PASTURE	320	65		1801	
00829	DANA MEADOWS SOUTH	13864	2334		21683	1920
00830	CHACE BLOCK	14996	2123		44970	5546
00831	COAD MOUNTAIN	7012	888		19295	
00832	NORTH ANSCHUTZ	4479	765		5120	
00833	T.B. NORTH AREA	530	76		1177	
00834	FOOTE CREEK PASTURE	6466	1134		13115	1280
00835	PETES GAP	2560	287		3200	
00838	SOUTH WALCOTT	2413	281		2778	320
00839	LONE TREE ALLOTMENT	2559	470		2723	
00840	SOIL BANK PASTURE	160	27		640	
00841	SCHROEDER	120	7		5262	
00842	WOLFE	1250	139		360	
00843	MEADS	640	120		3360	
00844	PASS CREEK FLATS	3238	327		3667	640
00845	T.A.RANCH	858	120	2085	4157	517
00846	COYOTE DITCH	80	14		2240	640
00847	HOME PASTURE	80	13			
00848	RATTLESNAKE	950	202		718	
00849	MIDLAND	661	159			
00850	HOME RANCH	7152	585		17802	3360
00851	WEST ELK MOUNTAIN	790	127			
00852	UPPER ROBBERS ROOST	2880	447		9906	
00853	U.L.ALLOTMENT	640	132		2560	640
00854	SOUTH ANSCHUTZ BLOCK	2280	345		12071	2080
00855	ARLINGTON ALLOTMENT	841	142		1199	
00856	BEAR CREEK PINE RIDGE	880	207		840	0
00857	DIAMOND DOME	2331	603		9076	1743
00858	THREE MILE TRACT	40	8			
00859	COALBANK MINE	1120	294		2698	640
00860	UPPER BEAR CREEK	972	72		2724	1280
00861	CORPENING	2503	327		3861	320
00862	LAKE CREEK FLATS	3770	329		3609	
00863	NORTH LAKE CREEK	160	19			
00864	SIXMILE HILL	147	18		620	120

00865	LAKE CREEK	1280	136		348	
00866	BUCK SPRINGS DRAW	2720	324		640	320
00867	DUMP	1280	192		850	
00868	V U	2647	357			
00869	TAYLOR RANCH	108	9			
00870	EAST COAD MTN ALLOT	190	40		644	
00871	BASIN RANCH	760	127		13720	2320
00872	OVERLAND TRAIL	120	24		1406	640
00873	DIXON BLOCK	637	38		647	
00875	COOPER HILL	840	118			
00876	SEVEN MILE	400	60			
00877	WILLS	298	54		617	
00878	COUNTY LINE	320	58		160	160
00879	LONESOME FOX	127	18		1031	431
01009	CHEROKEE CREEK	39	5		472	
01021	BIG HOLLOW	640	132		1235	
01022	ROMIOS RANCH	2120	265		440	
01030	HEATHER CREEK	2047	205		62	44
01045	CHAD	1672	248		1850	640
01063	COYOTE HILL	137	41		1109	
01101	AIRHEART PASTURE	520	45		701	640
01102	BIG GULCH	180	30		177	
01103	WEST BROWNS HILL	635	162		1708	640
01104	CEDAR RIDGE	821	164		80	
01106	CUSHING	280	51		286	
01107	DOLAN	240	60		20	320
01108	ETHERINGTON	80	16			
01109	FLY CREEK	529	100			
01110	HELL CANYON	1051	193		1128	
01111	HILL PASTURE	325	31		1448	
01112	LITTLE HORSE MTN	630	220		40	
01113	LITTLE SANDSTONE	1340	162		380	460
01115	MCCARY	395	71			
01117	MEXICAN MEADOWS	104	15		0	1740
01118	MORGAN-BOYER SUBUNIT	6508	1792		1160	720
01119	NORTH RASMUSSEN	882	248			
01121	PIONEER DRAW	190	68			
01122	POLING ISO TRACT	135	20		605	
01123	RASMUSSEN SUB UNIT	4751	931		12157	2503
01124	READER	205	30			

01125	READER BASIN PASTURE	2276	466		5221	2078
01126	ROAD GULCH	975	213			
01127	SHEEP MOUNTAIN	303	53			
01128	SHORT	995	240		70	
01129	SOUTH BAGGS	280	30			
01130	SOUTH PASTURE	497	89		3383	
01132	SPRING GULCH	471	110			
01133	STANDARD	330	92			
01134	STATE LINE 40	40	4			
01135	CEDARS	160	12			
01136	BATTLE MTN ISO TRACT	92	13			
01138	M.J. ANDERSON ISO #1	40	9		529	
01139	COBB CAT CO ISO TR	160	34			
01140	GRIEVE RESERVOIR PAS	124	31			
01141	M.J. ANDERSON ISO #2	35	8		160	
01142	EAST BROWNS HILL	493	106		1516	608
01143	L U GRIEVE PASTURE	200	49			
01144	COAL BANK DRAW	240	64		661	
01145	WALTERS HOMESTEAD	160	36		560	
01201	GASPAR	160	58		3360	
01202	SPRING CREEK	200	52		680	
01203	FARTHING RANCH	650	75			
01204	FERGUSON RANCH A	360	52			
01205	ARMADILLO	160	18		200	
01207	SPOTTLEWOOD	40	11		600	
01208	SAND CREEK	40	8		1917	320
01209	LAZY D	61	35			
01210	N. CROW CREEK	2874	574		6054	320
01211	MCINTYRE DRAW	320	64			
01212	J.D.MCLEES	1160	135			
01213	BRUSH CREEK	404	80		80	
01214	HOCKERSMITH	320	80		1920	
01215	SOAPSTONE GR. ASSN.	40	10			
01216	SWITZER	40	8			
01218	LODGEPOLE CR.	480	120			
01219	ANDRES WILLADSEN	40	8			
01221	THREEMILE	724	172		1720	320
01222	LONG	320	60		200	
01639	ORDWAY POCKET	2049	592		1968	

01642	DEVILS GATE	25139	5571		17606	4552
01643	RAWLINS DRAW	6367	1627			413
01644	TURKEY TRACK	9057	1832		9248	1249
02026	LITTLE CAMP CREEK	2242	311		576	
02027	MUDDY CREEK PASTURE	73	21		248	
09001	ANCHOR RANCH	160	58			
09002	ANDERSON	240	60		560	560
09003	HAY DRAW	280	26		1781	100
09004	ROGERS CREEK	960	108		2936	180
09005	BAILEY ATKINSON	2190	375			
09006	KEN ATKINSON	2081	359		2521	721
09007	DALE CREEK	40	12		5075	
09008	DUTTON CREEK	320	74		2240	
09009	WLX	3536	501			
09010	SQUAW RANCH	40	10		1590	
09011	BESSIE BATH	785	168			
09012	BATH BROTHERS	1240	310		5430	
09013	IRON MOUNTAIN	4272	762			
09014	BELL-OTTE RANCH	1715	115		5280	1640
09015	SQUAW CREEK	40	4		200	
09016	DUNN ALLOTMENT	80	13		2144	
09017	THE BUTTES	320	48		420	
09018	N. LODGEPOLE CR.	160	37		1440	
09019	ANTELOPE CREEK	1042	249		5085	
09020	BOVEE HORSE PASTURE	80	13			
09021	BOVEE MOUNTAIN	2267	309			
09022	GIBBS PLACE	1664	282		1400	160
09023	WHEATLAND TUNNEL	2091	352		2304	10
09024	WHEATLAND RES #2	800	132			
09025	JAMES LAKE	4538	676			
09026	WAECHTER CANYON	917	206		3448	
09027	WOODROW BROW	1680	165		240	1116
09028	BEAR HEAD MOUNTAIN	80	8		640	640
09029	INDIAN ROCK	680	79			
09030	BURNETT CREEK	3071	371		6016	720
09031	PINTO ROCKS	849	81		12267	640
09032	J.H.BUTLER	41	7			
09033	CARLIN RANCH	1948	300		39360	
09034	PALMER CANYON	280	71		1600	

09035	CHALKHILLSDRYCR	18682	2865		14461	1922
09036	PINE RIDGE	240	55		6580	640
09037	BULL CAMP PEAK	4274	678		20352	1280
09038	ERVIN CORL	40	7		840	
09039	CROONBERG RANCH	1440	215		3222	
09040	PARSONS CREEK	1680	93		2280	
09041	DAVIDSON CREEK	6005	882		5267	720
09042	CROSS ISOLATED TRACT	120	18			
09043	OWEN CREEK	395	66		1320	600
09044	WHEATLAND NO 3	4745	1218		16877	1280
09045	NORTH FORK	320	54			
09047	JUNCTION	840	178		1368	840
09048	CARROLL	520	138			
09049	DOUBLE K RANCH	798	181			
09050	DUMBELL RANCH CO.	80	8		6865	1190
09051	MULE-ROGERS CR.	7292	1683		4203	1920
09052	SPRING CREEK	1462	298		2713	
09053	STRAIN	155	13		160	
09054	WOODS LANDING	238	40		1902	
09055	FERGUSON RANCH C	258	44			
09056	PR5 RANCH	1001	148		5560	760
09057	SOUTH FORK	1033	167		6044	640
09058	40 MILE CREEK	80	16		600	360
09059	CHARLES GARRETT	640	67			
09060	SYBILLE CR.	1124	169		2760	965
09061	WARREN GEORGE	4781	554		5471	718
09062	WILLIAM GOODRICH	1522	174			
09063	JMS RANCH	160	40			
09064	MENTER-RATTLESNAKE	719	46		838	
09065	THE BOWL	240	42		1130	
09066	WEST FORK	1680	290		3357	1280
09067	ANTELOPE BASIN	1655	325		6353	1391
09068	ROCK CREEK	1888	286		10293	640
09069	COOPER LAKE	3990	880		15919	1205
09070	CANYON CREEK	80	8		4700	1040
09071	SLATE CREEK	477	46			
09072	HARRIS RANCH	2603	465		21082	1618
09073	WEBB LAKE	520	85		3176	
09074	ELK HORN	5093	1110		6490	639
09075	SCHICK	160	43		480	

09076	DOWNEY LAKES SOUTH	160	48		1490	
09078	TIMBER CANYON	1162	185		6022	160
09079	THE BUTTES	120	30		1272	
09080	MILLER	40	6		17	
09081	COALBANK	40	10		1280	840
09082	GOVERNMENT CREEK	160	48		3871	
09083	BAMFORTH	393	85		2240	1600
09084	HAMILTON SPRINGS	2283	570		2084	
09085	NORTH SYBILLE CREEK	80	3		1418	
09086	BAR M MOUNTAIN	635	45		1556	
09087	KENNEDY	648	60		4256	
09089	RIVER BASIN	3077	205		3317	917
09090	DODGE CREEK RANCH	318	88		2237	640
09091	LEAZENBY LAKE	40	10		340	
09092	STEAMBOAT ROCK	4792	872		16803	
09093	W.J.LOGAN	40	11			
09094	IRVINE	2002	438			
09095	JAMES ATKINSON	120	15		1600	
09096	BOSWELL RANCH	2243	305		1741	680
09098	ROCK CREEK LAKES	320	34		5467	1600
09099	MCGILL	797	77		1360	
09100	PARADISE CREEK	80	7		640	
09101	IONE	200	30		1720	640
09102	SHEEP ROCK	99	4		2111	560
09103	PINTO CREEK	2840	396		6760	640
09104	NORTH SPRAGUE	640	123		10720	5128
09105	RING MOUNTAIN	9650	1181		3209	2378
09106	MILL CREEK	253	58		2536	240
09107	POE MTN-CANYON CREEK	1360	161		4041	640
09108	MCKECKNIE MEADOWS	56	14		1732	
09109	STROUSE HILL	11606	2328		38443	5113
09110	PLUMBAGO CANYON	160	32		480	
09113	SHEEP CREEK	427	103		6479	407
09114	BAILY RANCH	160	15			
09115	NEEDMORE RANCH	1570	151			
09118	EAST JELM MOUNTAIN	1534	259		2804	
09119	HOLLAND LEASE	440	83		280	
09120	SUNRISE CREEK	1020	91	1020	684	

09121	PALMER	160	25		360	
09122	HECHT	37	4		800	117
09123	HALLECK CANYON	1885	236		7677	1280
09124	BOSLER CANAL #3	120	36		5194	640
09126	BONE CREEK	4480	900		8960	1280
09127	C U RANCH, INC.	880	117		1043	241
09128	R. O.	195	35		3525	640
09129	RED MOUNTAIN	78	20			
09130	BUFORD	110	38		145	
09131	DALE ROBBINS	959	184		2638	
09132	ROBBINS	2956	414		10097	
09133	GREEN CREEK	564	40			
09134	HOLADAY PLACE	241	24		640	
09135	BADGER CREEK	353	23			
09136	TWENTYMILE DRAW	4977	940		13305	1680
09137	CROSS C RANCH	1920	146			
09138	LOOKOUT RANCH	3534	648		5030	1417
09139	SAND CREEK RANCH	320	98			
09140	SANDERS	77	20			
09141	MULE CREEK	1433	141		6450	2000
09142	JW/SHEEP MTN RANCH	3947	739		16645	640
09143	BREES	640	180		5375	640
09144	MONAGHAN RANCH	600	143		7120	1080
09145	BOOT HEEL	1520	297		2000	640
09147	SOMMERS	1824	386		4803	
09148	SPRINGFIELD RANCH IN	1040	250		3063	11
09149	STERRETT	120	24			
09150	INDIAN CHIPS	2240	279		18620	640
09151	N LARAMIE-N CR.	2242	259		6853	800
09152	COYOTE CANYON	280	33		1040	
09153	SELLERS MTN.	2840	470		3807	360
09154	MEISER CREEK	1626	220		1050	
09155	MCFARLANE CREEK	1308	94		3253	1760
09156	DUCK CREEK	592	43			
09157	T-K RANCH	640	149			
09159	BOSWELL SPRINGS	2796	883		13754	3520
09161	DIRT FARM	320	42		101	
09164	THREE DS AND T	920	104			
09165	LITTLE LARAMIE RIVER	85	8		437	
09166	I-80 OVERPASS	178	56		480	

09167	CANYON CREEK	160	26		3360	800
09168	MUD SPRINGS	8471	1528		39444	5788
09170	WARREN LVSTK A	2719	245		27757	1760
09171	WARREN LVSTK B	320	35		3908	160
09173	DUTTON CREEK SOUTH	675	146		8470	1280
09174	MARIUS WILLADSEN	40	8			
09175	BERTHEL LAND & LIVE.	1096	334			
09176	MERRIL DRAW	1401	171		3476	
09178	KIRK RANCH NATRONA	1400	156		1120	400
09179	YANKEE DRAW	1777	311		645	
09181	RIVER PASTURE	640	124		472	960
09182	CHIMNEY ROCK	1220	215		16184	2240
09183	LARAMIE PEAK BGWR	40	6			
09184	J. KENNEDY'S	1120	129		2080	800
09185	N LARAMIE RIVER	83	15			
09186	FLAT TOP ALLOT	507	132		3054	
09187	CHINA WALL	1040	102		3146	
09188	S. MEISER CREEK	1266	112		4098	
09189	GEORGE CREEK	40	5		1150	80
09192	SECTION 22	640	64			
09194	BLUEGRASS	1551	259		10426	640
09195	SUGAR LOAF	560	47	120		1100
09196	HOLMAN	80	9			
09197	DESERT	320	45			
09199	EAST SHELDON	160	42			
09201	IRON MOUNTAIN CR.	1680	338		1040	357
09202	LOOKOUT PEAK	2831	595			
09203	UPPER PINE RIDGE	3366	1040			
09206	INDIAN HEAD ROCK	464	37		304	40
09207	MOUNTAIN INCOMMON	1407	103		680	10
09208	PLUMBAGO	410	36		1353	120
09209	SQUAW MOUNTAIN	121	10		560	
09210	TWENTYTWO MILE	3151	697		4039	
09212	COW CREEK	102	10		692	
09213	PASCO	1126	189			
09214	IONE LAKE	13922	3192		42660	3900
09215	LARAMIE RIVER	480	89			
09216	TRAPPER SPRINGS	641	128		5726	
09217	MCGILL LAKES	2372	644		3049	

09218	MOONSHINE PEAK	870	146		1515	10
09219	TRISH	3324	554		3272	
10102	STEWART CREEK	170209	10472		3439	9152
10103	CYCLONE RIM	291954	40661		3165	13489
10201	BUZZARD	51941	11413	4259	11286	12838
10202	BUZZARD RANCH MEADOW	526	339		3935	515
10203	CHERRY CREEK	30229	4842		3381	4261
10204	DESERT CLAIM	360	80		200	
10205	BAR ELEVEN	51570	11419		1635	1051
10207	FERRIS MOUNTAIN	35729	4978		3833	3352
10209	JUNK CREEK	10366	1841	1133	198	1139
10212	LONG CREEK	5744	969	1243	4138	505
10215	POLE CANYON	4985	767		447	30
10216	SAND CREEK	2309	402	1074	341	192
10217	SAND CR. RANCH PAST.	796	108		2578	645
10218	SEMINOE	80025	9092	6548	66309	4821
10219	STATION 8	5570	1257	423		
10220	TAPERS	770	99		160	
10221	STONE	77920	12899		22972	6956
10222	WOOD CREEK	1522	312		361	
10400	NORTH SAVERY CREEK	120	31		846	2070
10442	HORSE PASTURE	160	33		1240	160
10501	ADAMS RANCH	39	6		244	
10502	ADOBE TOWN	31155	1820			400
10503	BIG ROBBER	16499	1510		25	960
10504	BIG ROBBER SPREADERS	1042	114			
10506	CONTINENTAL	26228	2812		40	22
10508	COTTONWOOD HILL	13794	769		24	630
10509	COW CREEK	64681	2629		1522	1520
10510	CROOKED WASH	7269	754			
10511	ESPITALIER	23791	2755		641	323
10512	GRINDSTONE SPRINGS	8958	413			80
10513	LITTLE POWDER MTN	16197	2042		280	640
10515	MEXICAN FLATS	15055	1695			669
10516	MEXICAN GRAVES	18076	1778		80	2080
10517	OPPENHEIMER	12088	1084		1853	
10518	POISON BUTTES	5815	465		320	422
10519	POWDER MOUNTAIN	12579	1305		720	640
10520	POWDER RIM	46532	6542		280	

	ROTATION					
10521	RED CREEK	31916	3003		280	
10522	RIVER BOTTOM	333	163	642		
10523	ROTTEN SPRINGS	20956	1439			40
10524	SAND CREEK	29421	2839			
10525	SOUTH BARREL	9311	951		198	720
10526	SOUTH FLAT TOP	17727	1659		480	640
10527	V SPREADERS	320	150			
10528	WILLOW CREEK	76412	5362		40	1480
10529	HEADQUARTERS RANCH	142	25		150	320
10530	SOUTH MUDDY	1562	123			
10531	GEORGE DEW	360	80		511	
10532	44 RANCH	87	7		40	
10601	BADWATER	10251	1247		10246	1280
10602	BULL CANYON	3076	373		4612	
10604	COAL BANK WASH	3833	514		3836	
10607	ECHO SPRINGS	21284	2413		22904	1960
10608	EMIGRANT	1285	85		4661	840
10609	FILLMORE	17449	2839		21834	640
10610	SOUTH LACLEDE	34986	3618		18659	38
10611	NORTH BARREL	28080	2930		27840	
10612	NORTH PINE BUTTE	1316	116		1034	
10613	NORTH LACLEDE	20962	2155		20759	
10614	OLSON RANCH PASTURE	240	50			
10615	RINER	26530	3332		28998	1434
10616	SIXTEEN MILE	37513	3628		42716	1280
10619	SOUTH RED DESERT	4992	756		5374	
10620	SOUTH WAMSUTTER	15188	1115		15192	640
10621	TIPTON	30227	4752		30452	
10623	PINE GROVE/BOLTEN	120012	12800		148017	9340
10624	NORTH BAGGS	347	23		1583	10
10625	SOUTH PINE BUTTE	257	34		800	
10626	LAZY Y S RANCH	8614	1380		3159	
10720	SHAMROCK HILLS	19556	1678		19434	160
10721	BRIMMER PASTURES	291	28		1043	
10722	CHAIN LAKES	30629	1380		30987	640
11000	TEDDY CREEK	604	36			
11001	A BAR A RANCH	5788	1101		20869	1270
11002	WARD GULCH	595	104		970	640
11003	CORRAL CREEK	1320	132			

11004	BENNETT PEAK	1800	143		1440	
11005	WOOD HILL	736	116		4960	
11006	SILVER SPUR	3075	587		15427	1280
11008	MINER CREEK	3453	280		175	640
11011	OTTO CREEK	446	51		651	
11012	SILVER SPUR NORTH	1348	164			
11013	TENNANT CREEK	729	63		431	
11014	KRAFT RANCH	240	12			
11015	FLYING DIAMOND	1008	220		131	12
11016	SKYLINE	229	42		1148	
11017	COTTONWOOD	1966	220		1160	
11019	ALBERT H. OLDMAN	560	48			
11020	EAST FORK	200	20		640	640
11023	ARTHUR ROUSE	1877	251			
11024	BEAVER CR HILLS	960	142		2178	640
11025	ENCAMPMENT RIVER	195	22			
11026	RYAN RANCHES	788	78		278	
11027	A CROSS RANCH	5319	697		10194	
11028	PLATTOGA RANCH	2400	393			
11029	SAULCY	3172	291		480	588
11031	NORTH FORK	961	63		673	
11032	COTTON RESERVOIR	1880	270		1000	
11033	ANTELOPE CREEK	643	31			
11034	WIANT	320	27			
11036	COTTONWOODCORRAL CR.	2037	229		1518	
11037	RIVER MEADOWS RANCH	320	23		353	
11038	PIERSON	35	8			21
11039	LITTLE BEAVER CREEK	800	160		480	640
11041	SO. CEDAR CR.	80	8		760	120
11042	DUFUNNY	240	15		820	
11043	BEAVER CR. HILLS SOUTH	1705	328		3229	640
11044	SOWDER-MCNANEY	355	52		1710	640
11046	PIERCE	20	3			
11047	HORN AND MEASON	785	67		457	
11048	KENNADAY	1160	137			
11049	PROSPECT MTN.	7869	1520		1693	330
11050	PLATT MINE	899	226		455	
11052	JOHN ROUSE	80	2		933	
11059	HERRING RANCH	80	8			

	PASTUR					
11060	COW CAMP	350	93	9	464	
11510	NORTH WILLOW CREEK	3469	625		313	
12019	COOPER CREEK	1402	240		724	640
12020	COTTONWOOD PASTURE	2023	312		640	
12988	SYBILLE SCHOOL	917	206		2818	
13591	TALBOTT	120	18			
14792	BROWNLEE RESERVOIR	1008	117		801	
14815	SANGER	20			135	
14863	PINE HILL	4211	712		6031	
14864	EAST ALLEN LAKE	930	171		1230	
15228	N FORK COTTONWOOD CR	571	42		1857	
15280	MEISER LAKE LOOKOUT	915	75		5327	640
15281	WALL ROCK	80	16		9220	
16569	GOVERNMENT GULCH	433	29		3764	131
16574	SOUTH BOVEE	477	84			
16754	GOLDEN CLOVER MINE	320	51		1172	
20613	PLATTE RIVER	8018	1577		8410	1280
21051	OWL CREEK	138	14		1107	
21053	RAINBOW CANYON	622	134		48	
21054	HEATHER CR LAND CO	40	4			
22001	CAROLYNS RANCH	66721	6009		70153	2600