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September 2009

Environmental Assessment

Woodruff and Dairy Ridge Cattle Allotments

Ogden Ranger District, Uinta-Wasatch-Cache National Forest
Rich County, Utah

Township 8 North, Range 5 East, Sections 6-7 SLM
Township 8 North, Range 4 East, Sections 1-4, 9-16, 22-24 SLM

ENVIRONMENTAL ASSESSMENT

WOODRUFF AND DAIRY RIDGE CATTLE ALLOTMENTS

Uinta-Wasatch-Cache National Forest
Ogden Ranger District
Rich County, Utah
September 2009

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APPENDIX A

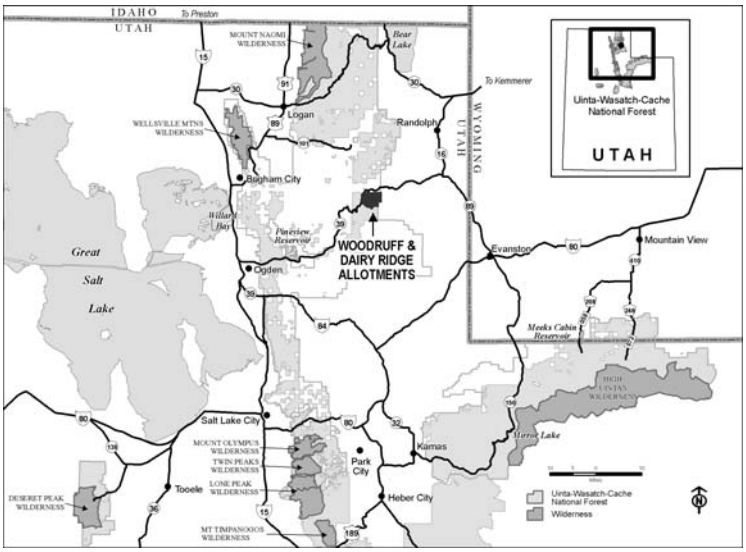
Environmental Assessment
Woodruff and Dairy Ridge Cattle Allotments

Chapter 1 – Purpose and Need

1.1 Introduction

The Woodruff and Dairy Ridge Cattle Allotments are located in Rich County approximately 30 miles northeast of Ogden, Utah (see Figure 1.1) in T8N, R5E, Sections 6 and 7 and in T8N, R4E, Sections 1-4, 9-16 and 22-24, SLM. Lands within these allotments are managed by the Ogden Ranger District of the Uinta-Wasatch-Cache National Forest. The allotments include approximately 7,470 permitted acres.

Figure 1.1 Woodruff-Dairy Ridge Allotments Vicinity Map



The Ogden Ranger District of the USDA Forest Service has developed a proposed action for issuance of a term grazing permit for these allotments. Compliance with the National Environmental Policy Act (NEPA) is required when permits are issued (or re-issued). This document describes these allotments, and describes the proposed action, purpose and need for this action, and discloses the environmental effects.

1.2 Background and History

The Ogden Ranger District has authorized livestock grazing on the Woodruff and Dairy Ridge Allotments for several decades via term grazing permit(s). The Woodruff Allotment has 2 pastures (upper and lower) and has been managed as a cattle allotment for several decades. The Dairy Ridge Allotment was managed as a sheep allotment until about 1988, when fences were built and the type of permitted livestock use was changed to cattle. Woodruff Allotment is currently permitted for 554 cow-calf pairs. Dairy Ridge is permitted for 100 cow-calf pairs.

Table 1.1 Summary of current grazing on each of the two allotments

Allotment	NFS Acres[1]	Livestock Number-Class	Period of Use	Grazing System
Dairy Ridge	1,985	100 cow-calf pairs	July 1st - September 15th	Deferred rotation, managed together with Woodruff allotment as three pastures between the two allotments
Woodruff	5,630	554 cow-calf pairs	July 1st - September 15th	Deferred rotation, managed together with Dairy Ridge allotment as three pastures between the two allotments

[1] From WCNF Corporate GIS layer. Acres are approximate and are not exact.

Term grazing permits are generally valid for 10 years from the date of issuance. Compliance with the National Environmental Policy Act (NEPA) is required when permits are issued (or re-issued). Section 504 (b) of Public Law 104-19, commonly referred to as the Rescission Act, provides: *"Notwithstanding any other law, term grazing permits which expire or are waived before the NEPA analysis and decision pursuant to the schedule developed by individual Forest Service System units, shall be issued on the same terms and conditions and for the full term of the expired or waived permit. Upon completion of the scheduled NEPA analysis and decision for the allotment, the terms and conditions of existing grazing permits may be modified or re-issued, if necessary to conform to such NEPA analysis."* Grazing on the Woodruff and Dairy Ridge Allotments is currently conducted in accordance with this direction.

Grazing is currently authorized on these two cattle allotments under existing permits and is managed per their respective Allotment Management Plans (AMPs). Each year, specific direction is provided in the Annual Operating Instructions (AOIs) for the allotments. Reauthorization of livestock grazing would require reviewing and updating existing AMPs as necessary.

1.3 Purpose and Need

The purpose is to authorize livestock (cattle) grazing in a manner that would meet or move towards the desired conditions defined in the Forest Plan, Wasatch-Cache National Forest (see Section 1.5). This analysis would comply with Section 504 of Public Law 104-19 to schedule and complete NEPA analyses on allotments where needed to authorize permitted grazing activity.

Monitoring and inventory data indicate there are areas of resource concern within the allotments. Range vegetative conditions on portions of the allotments are not meeting desired conditions prescribed in the *2003 Revised Forest Plan, Wasatch-Cache National Forest* (Forest Plan). Bare soil conditions exist in many aspen areas in excess of forest plan standards and guidelines. There is inadequate ground cover near springs, ponds, and in riparian areas along Peggy Hollow, Sugar Pine and Silvia Hollow, although riparian conditions are improving along lower Wheeler Creek and within exclosures. Most aspen communities lack desired plant species diversity, having an

abundance of undesirable forbs (such as cone flower) and a lack of grasses. Bare soil conditions from gopher activity are also present in some of the aspen stands within the allotment. Sagebrush stands have higher sagebrush densities than desired and lack diversity of age classes. These conditions indicate a need for some type of change in management of grazing use on the Woodruff and Dairy Ridge Allotments.

Grazing is a sustainable use of National Forest System (NFS) lands and is permissible through the Multiple Use Sustained Yield Act of 1960, as amended. The Woodruff and Dairy Ridge Allotments lie within the Bear Management Area and contain lands considered capable and suited for domestic livestock grazing in the Forest Plan. (FEIS for the Forest Plan, pg. B9-2; Forest Plan, pg. 4-126) Continued domestic livestock grazing is consistent with the goals, objectives and guidelines of the Forest Plan.

It is Forest Service policy to make forage available to qualified livestock operators from lands suitable for grazing consistent with land management plans (FSM 2203.1; 36 CFR 222.2(c)).

It is Forest Service policy to continue contributions to the economic and social well being of people by proving opportunities for economic diversity and by promoting stability for communities that depend on the range resource for their livelihood (FSM 2202.1). Making forage available for grazing helps to support rural communities.

The Forest Plan, which directs the management of lands encompassing the project area, has as one of its desired conditions to permit livestock grazing use within active allotments and to recognize the importance of permitted grazing on the national forest to local agricultural communities, maintenance of open space, and the western ranching lifestyle (pg. 4-126).

1.4 Proposed Action

The Forest Service proposes to authorize continued grazing of cattle on the Woodruff and Dairy Ridge Allotments at a level and in a manner consistent with the direction in the Forest Plan (see Section 1.5) and other applicable laws and regulations. The proposed action recognizes the need for forage production from Forest Service administered lands as identified in the Forest Plan.

The proposed action would manage the two allotments together as three pastures (two in Woodruff and one in Dairy Ridge) with two of the three pastures deferred each year on a rotational basis. Deferred rotation refers to the practice of keeping livestock out of a pasture until later in the grazing season, usually until after key plants are seed-ripe, allowing for regeneration of vegetation. The allotments have been managed this way under a trial basis for the past two years.

The proposed action identifies aspen communities in unsatisfactory condition. The forest plan requires a lower utilization rate in areas not meeting Desired Future Conditions. To improve areas of unsatisfactory condition or downward trend, the proposed action would employ an adaptive management strategy (Section 2.4.2). Adaptive management allows for changes in management within defined limits as needed to meet Forest Plan standards and guidelines and

desired future conditions. Monitoring of key areas would determine the need and frequency for administrative adjustments in the timing, intensity, frequency, and/or management of grazing.

The proposed action includes a drift fence that would be constructed along the Middle Ridge, near the southern boundary of the Dairy Ridge allotment. The Silvia Hollow drift fence is proposed to be built along a previously used fence alignment to help improve cattle distribution and would reduce cattle impacts to fisheries and riparian habitat in the Silvia Hollow drainage between Wheeler Spring and William Spring. The alignment was identified as a location that will allow for easier construction and maintenance of the fence. The fence will help reduce cattle movement into neighboring Little Monte and Bountiful sheep allotments. This design feature will help move plant, soil and aquatic conditions in the riparian area toward the desired future condition.

The proposed action also includes extending the Ranger Hollow water system, adding three additional trough sites. This provides water to areas formerly served by Wheeler Creek which will now become inaccessible because of the Silvia Hollow drift fence.

1.5 Forest Plan Direction

The Forest Plan sets forth management direction for managing the land and resources of the Wasatch-Cache National Forest, and among other things, describes management goals and objectives, resource protection methods, and desired resource conditions. The Forest Plan is the result of programmatic analysis, which is addressed in the FEIS for the Revised Forest Plan.

The Woodruff and Dairy Ridge Allotments environmental assessment is a project-level analysis; its scope is confined to addressing the significant issues and possible environmental consequences of the project. Where appropriate, this analysis will tier to the Forest Plan FEIS, as encouraged by 40 CFR 1502.20.

This analysis identifies site-specific desired conditions for the project area and compares them against the existing conditions. Identification of resource management needs is then the comparison of desired conditions with existing conditions to determine the extent and rate at which current management is meeting or moving toward those desired conditions. Where a particular existing condition and desired condition are the same, there is no need for change. Conversely, where an existing condition and a desired condition are not the same, there is a need for change.

1.5.1 Management Prescriptions

Management Prescriptions Categories provide a general sense of the management or treatment of the land intended to result in a particular condition being achieved or set of values being restored or maintained. These categories are just one part of the total management direction that includes goals, objectives, desired future conditions, standards and guidelines, and monitoring requirements. The Forest Plan management prescription allocations within which the allotment is located include Management Prescriptions 3.1W (Watershed Emphasis) and 4.4 (Dispersed Motorized Emphasis). Within these management prescriptions, livestock grazing is allowed on open allotments to meet site-specifically defined desired conditions.

1.5.2 Management Areas

The Woodruff and Dairy Ridge Allotments are within the Bear Management Area as defined in the Forest Plan.

1.5.3 Desired Future Conditions

Desired future conditions (DFC) are described at both the Forest level (pages 4-5 through 4-15) and for each management area. Desired conditions for the management area applicable to the Woodruff and Dairy Ridge Cattle Allotments are found in the Forest Plan for the Bear Management Area (pages 4-119 through 4-127).

In accordance with direction in the Forest Plan (page Appendix X-5), the interdisciplinary team (ID Team) has reviewed and in some cases refined or supplemented the Forest Plan prescribed DFC to be more specific to the project area and the proposed action. The refinements/supplements are consistent with the Forest Plan prescribed DFCs, and are outlined in the Table 2.4.2.1. In order to be in compliance with Forest Plan desired future conditions, a majority of the key areas must be moving toward (i.e., upward trend), meeting or exceeding the requirements listed.

1.5.4 Standards and Guidelines

The Forest Plan contains standards and guidelines (see pages 4-36 thru 4-56 and pages 4-58 thru 4-78) including some applicable to livestock grazing. Those pertinent to these allotments and this environmental assessment are summarized in Section 2.5 of this document.

1.6 Decision to be Made

The Ogden District Ranger, as the Responsible Official, will decide whether or not to authorize grazing on the Woodruff and Dairy Ridge Allotments and if so, under what conditions (design features, mitigation, monitoring). If continued grazing is authorized, an AMP will be developed to incorporate and implement the decision. The AMP will be completed and approved as soon as practical and without further NEPA documentation.

1.7 Public Involvement

In March 2009, a Forest interdisciplinary team met to develop proposed actions and to identify preliminary issues, concerns and measures to carry forward into the analysis. The proposal was provided to the public and other agencies for scoping and comment in May, 2009. The project was included in the Spring 2009 Schedule of Proposed Actions (SOPA). One comment letter was received. Using comments received during the scoping and comment period, the Forest refined the list of issues and concerns to address. In August of 2009, it was discovered some addresses had been inadvertently left off the original mailing list. Therefore, the public comment period was reopened for 30 days. An additional three comment letters were received during that period. The response to these comments can be found in the EA, Chapter 4, Response to Comments.

1.8 Issues

The ID Team identified the following issues to be addressed in the environmental analysis. These issues were used to guide the formulation of alternatives and provide a framework for the effects analysis to be documented in the environmental assessment.

- Cattle grazing in uplands can cause ineffective ground cover resulting in accelerated soil erosion and degradation of soil quality. However, grazing can help to reduce fine fuels and create new vigor in decadent shrubs and grasses.

- Cattle grazing can cause changes in plant composition and plant community structure, potentially affecting threatened, endangered, or Forest Service sensitive species.

- Cattle grazing and trampling in riparian areas can reduce vegetative cover, decrease bank stability, and increase sedimentation which can cause changes in channel morphology, decrease water quality, and alter fish habitat. However, stock ponds and other livestock water improvements can provide valuable aquatic habitat and water for wildlife.

- Cattle grazing can decrease cover and forage used by a variety of wildlife species. Potentially affected species include USFWS-listed Threatened, Endangered, Proposed and Candidate species; Forest Service Sensitive species; Wasatch-Cache National Forest Management Indicator Species (MIS), migratory birds, and general species of local concern.

1.9 Other Disclosures

Evaluation of the proposed action indicated effects on the following would not vary between alternatives and/or there would be very little to no effect on these resources. Therefore, the following are not covered in detail in the EA, but are discussed briefly below to add to the overall understanding of the proposed action. Technical reports with additional information are available in the project record.

1.9.1 Rare Plants

Threatened, Endangered, Proposed, Candidate Plant Species
According to the U.S. Fish and Wildlife Service (Utah Field Office) March 2009 *List of Endangered, Threatened, Proposed, and Candidate Species for Utah Counties* (available in the project record), there is one Threatened (T) plant species found in Rich County, to be considered in this assessment: Maguire's Primrose *(Primula maguirei)*.

- **Maguire's Primrose**

Maguire's primrose occurs on damp ledges and shaded crevices along canyon walls in coniferous forests. It occurs mainly on north and east facing moss-covered cliffs belonging to the Lake Town/Fish Haven dolomitic limestones, but also occurs on open slopes on soils derived from this geologic formation. The species occurs from 4,800 to 6,600 feet in elevation. It is known only in Logan Canyon and its immediate side drainages on the Logan Ranger District in Cache County.

It is not found in or near the Woodruff and Dairy Ridge Cattle Allotments. Since this plant species is not found in the project area, there will be no direct, indirect, or cumulative effect (*no effect*) and it will not be discussed further in this EA.

Forest Service Sensitive Plants
Forest Service Sensitive plant species considered during this assessment include the following: Tower mustard ((*Arabis glabra* var. *furcatipilis)* (Recommended Sensitive)); Brownie ladyslipper*(Cypripedium fasciculatum);* Maguire draba (*Draba maguirei);* Burke draba (*Draba burkei);* Cronquist daisy (*Erigeron cronquistii);* Logan buckwheat (*Eriogonum brevicaule* var. *loganum);* Mt. Naomi Penstemon (*Penstemon compactus);* and Starveling milkvetch (*Astragalus jejunus* var.*jejunus).* Although extensive surveys have not located any new populations of rare plants, it is possible these species may exist within the Woodruff and Dairy Ridge Cattle Allotments.

Animal activities, both domestic and wild, may impact populations of plant species by herbivory and/or trampling. These plants can also be negatively affected by a variety of human activities, including impacts associated with unauthorized off highway vehicle (OHV) use, hiking, camping, picnicking and other activities that cause people to congregate in unique areas for long durations.

For those species listed above that have potential habitat within the project area and in habitats that may be grazed by cattle, the proposed action may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Since there will be no difference between alternatives and population viability will be maintained in either case, sensitive plant species will not be addressed further in the EA.

1.9.2 Noxious Weeds
Noxious weeds are generally designated as such because they have potential negative effects on agriculture, economics, or ecosystems, and are usually not so abundant that eradication is infeasible. Noxious designation has legal ramifications for interstate transport, nursery stock inspections, and seed certifications. Transport by wind, vehicles, clothing or animals are all mechanisms for noxious weed dispersal into new habitats. For this reason noxious weed invasions due to recreational activities and permitted uses are a primary concern of managers. All of the species have multiple vectors of seed dispersal, including wild and domestic animals.

Noxious weeds infest small portions of the Woodruff and Dairy Ridge Cattle Allotments. The project area was included in a noxious weed inventory Utah State University did for the Forest in 2006-2008. Based on that inventory, approximately 60.5 acres were identified as being infested with noxious weeds (GIS analysis of Forest Noxious Weed Infestation data). The allotments have 60 known infestations comprising 60.5 acres of weeds, which is less than 1% of the total allotment acres. It is important to note that there is no single large, contiguous infestation of any one species. The acres infested are comprised of numerous small infestations scattered throughout the landscape.

All weed species will be treated according to the 2005 WCNF Noxious Weed Management EIS. In recent years the Uinta-Wasatch-Cache NF and the Ogden Ranger District have increased

efforts in treatment of noxious weeds by hiring weed crews and becoming involved with local Cooperative Weed Management Associations. These increased efforts will continue across all alternatives. Therefore, noxious weeds will not be discussed further in the EA.

1.9.3 Inventoried Roadless Areas

The 5,591-acre Sugar Pine roadless area is located within the Woodruff and Dairy Ridge Cattle Allotments. Appendix C2 of the Final Environment Impact Statement for the Wasatch Cache Revised Forest Plan is a document entitled "Evaluation of Roadless Area Values and Analysis of Effects of Individual Roadless Areas." Every roadless area on the Forest was evaluated according to roadless values the area possessed. The Sugar Pine roadless area was evaluated as a "low value" roadless area (FEIS, Appendix C2-101).

The effects of livestock grazing on wilderness attributes and roadless area characteristics are limited. Roadless characteristics include soil, water, diversity of plant and animal communities, habitat for TES and species dependant on large undisturbed blocks of land, primitive and semi-primitive non-motorized and motorized recreation, reference landscapes for research, study and interpretation, landscape character and scenic integrity, traditional cultural properties and sacred sites and other identified unique conditions. Of these, grazing has the potential to alter natural landscapes, disturb habitat, and change native plant and animal communities.

In general, neither the proposed action nor the no action alternative would have any measurable effect on the roadless area values as disclosed in the water resources, vegetation, aquatic species, wildlife, and recreation sections of this EA (see Chapter 3). Effects to the condition and structure of vegetation diversity would be isolated and non-significant under the proposed action. Grazing is not affecting other roadless values and would not affect wilderness suitability. Both the proposed action and the no action would maintain roadless values and wilderness attributes. There would be no measurable effect to roadless areas, and therefore, inventoried roadless areas will not be discussed further in the EA.

1.9.4 Heritage Resources

Heritage resources were not identified in scoping as a key issue. In addition to review under NEPA, consideration of effects on heritage resources is mandated under Section 106 of the National Historic Preservation Act (NHPA) as implemented by 36 CFR Part 800. Requirements include the need to identify significant properties that may be affected by the proposed action or alternatives. Historic properties are defined as archeological sites, standing structures, or other historic resources listed in or determined eligible for listing in the National Register of Historic Places. For purposes of analysis of effects on heritage resources, the Area of Potential Effect (APE) for this project is the Woodruff and Dairy Ridge Cattle Allotments.

Class I and II cultural resource surveys and investigations have been conducted for a number of Uinta-Wasatch-Cache National Forest range allotments. With the exception of site 42TO2699, located in the Stansbury Mountain Range, the USFS investigations did not identify adverse effects to significant cultural resources related to livestock grazing on Forest managed lands (Cultural Resource Report No. U-08-FS-1127f (WS-08-804) 2008).
Based on the results of previous cultural resource inventories, the UWCNF made the determination that the proposed authorization of grazing will result in No Adverse Effect to

Historic Properties per 36CFR 800.5(b). The Utah State Historic Preservation Office concurred with this determination in a letter dated December 8, 2008 and recommended no further action.

For the Woodruff and Dairy Ridge Cattle Allotments, under the proposed action, the reconstruction of an existing fence along the last mile of Middle Ridge will provide protection for the riparian area in Silvia Hollow between Wheeler Spring and William Spring. A Class III cultural resource survey was conducted of the area of potential effect for the fence construction and repair (August 2009). No cultural resources were identified. The USFS determined that the fence project will result in No Historic Properties Affected per 36CFR 800.4(d)(1).

Therefore, regardless of the alternative selected, there is no anticipated adverse effect to heritage resources in the area and heritage resources will not be further discussed in the EA.

1.9.5 Air Quality

Forest Plan Forestwide Goal 1 for air resources states: Ensure National Forest management activities result in meeting state and federal air quality standards, and comply with local, state and federal air quality regulations and requirements.

Air quality in and around the area is high due to the relative isolation from urban centers, limited access, good vegetative ground cover, and the large scale of the analysis area. Currently, the air quality in the project area is within the standards and guidelines of the Forest Plan.

Activities resulting from this grazing project will not significantly affect the factors contributing to a high quality air shed. Therefore, grazing will not have direct, indirect, or cumulative effects on the resources in this airshed.

1.9.6 Environmental Justice

Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Toward attaining EJ for all communities and persons in the United States, Executive Order 12898 (February 11, 1994) directed all Federal agencies to evaluate their proposed actions to determine the potential for disproportionate adverse impacts to minority and low-income populations.

In the memorandum to heads of departments and agencies that accompanied Executive Order 12898, the President specifically recognized the importance of procedures under NEPA for identifying and addressing environmental justice concerns. The memorandum states that “each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by [NEPA].”Implementation of either of the alternatives evaluated in this EA would not result in adverse impacts to environmental resources and socioeconomic conditions. Therefore, disproportionate direct, indirect or cumulative adverse impacts on low income or minority populations would not occur.

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Chapter 2 – Alternatives

2.1 Introduction

This chapter describes the formulation of the proposed action and alternatives and discusses alternatives considered but not analyzed in detail. It also summarizes the environmental impacts of the proposed action and the alternative to it, including associated mitigation measures.

2.2 Formulation of Alternatives

NEPA regulations require that agencies should "vigorously explore and objectively evaluate all reasonable alternatives" to the proposed action. The alternatives should achieve the same or similar purpose as the proposed action and should address issues raised and include appropriate mitigation measures not already included in the proposed action. Alternatives that would not be reasonable, either because they do not meet the purpose and need or because of other considerations, may be eliminated from detailed study. A brief discussion of the reasons for their elimination is given.

The Forest Service ID Team evaluated the proposed action in consideration of the relevant issues. Alternatives to the proposed action addressing the relevant issues were developed. If alternatives were identified which were not reasonable, they were recorded but not analyzed in detail (see Section 2.3).

2.3 Alternatives Considered but Eliminated from Detailed Analysis

Current Management: The Woodruff and the Dairy Ridge Cattle Allotments were managed as two separate allotments prior to the 2-year trial period initiated in 2006. The Woodruff Allotment has two pastures (upper and lower) and was managed on a deferred grazing system. The Dairy Ridge Allotment consists of one pasture grazed season long. The Current Management Alternative would continue grazing management as two separate allotments. The permitted number of livestock and grazing season would be as has been authorized for the past few years. The authorized grazing use on Woodruff is for 554 cow-calf pairs with a grazing season from July 1 to September 15. The authorized use on Dairy Ridge is for 100 cow-calf pairs from July 1 to September 15.

This alternative (grazing management of 2 separate allotments as described above) was eliminated from detailed study because it does not meet the purpose and need. Resource conditions on the allotment (see Purpose and Need, Section 1.3) indicate a need for change in management of grazing use on the Woodruff and Dairy Ridge Allotments to bring about improved vegetation conditions in uplands and riparian areas.

2.4 Alternatives Considered in Detail

This section describes two alternatives considered in detail. The alternatives analyzed include the required "No Action", which analyzes a no grazing

alternative, and the "Proposed Action", which includes an adaptive management component.

2.4.1 Alternative 1 - No Action (No Grazing)

The "no action" alternative is included to meet requirements of the National Environmental Policy Act [40 CFR 1502.14 (d)] and the Grazing Permit Administration Handbook, FSH 2209.13, Chapter 90, Section 92.31 which stipulates that "in addition to the proposed action, the no action alternative shall always be fully developed and analyzed in detail." "No action" is synonymous with "no grazing" and means that livestock grazing would not be authorized within the project area.

Under this alternative, livestock would no longer be permitted to graze on the Woodruff and Dairy Ridge Allotments. This pertains to sheep and cattle. If this alternative were selected, grazing would not be authorized after a two-year notification to the permittee from the date the decision is made. Non-permitted recreational horse use could still occur.

2.4.2 Alternative 2 - Proposed Action

The proposed action would manage the two allotments together as three pastures (two in Woodruff and one in Dairy Ridge) with two of the three pastures deferred each year on a rotational basis. Deferred rotation refers to the practice of keeping livestock out of a pasture until later in the grazing season, usually until after key plants are seed-ripe, allowing for regeneration of vegetation. The allotments have been managed this way under a trial basis for the past two years.

The proposed action identifies aspen communities in unsatisfactory condition. The forest plan requires a lower utilization rate in areas not meeting Desired Future Conditions. To improve areas of unsatisfactory condition or downward trend, the proposed action would employ an adaptive management strategy (Section 2.4.2). Adaptive management allows for changes in management within defined limits as needed to meet Forest Plan standards and guidelines and desired future conditions. Monitoring of key areas would determine the need and frequency for administrative adjustments in the timing, intensity, frequency, and/or management of grazing.

The proposed action includes a drift fence that would be constructed along the Middle Ridge, near the southern boundary of the Dairy Ridge allotment. The Silvia Hollow drift fence is proposed to be built along a previously used fence alignment to help improve cattle distribution and would reduce cattle impacts to fisheries and riparian habitat in the Silvia Hollow drainage between Wheeler Spring and William Spring. The alignment was identified as a location that will allow for easier construction and maintenance of the fence. The fence will help reduce cattle movement into neighboring Little Monte and Bountiful sheep allotments. This design feature will help move plant, soil and aquatic conditions in the riparian area toward the desired future condition.

The proposed action also includes extending the Ranger Hollow water system, adding three additional trough sites. This provides water to areas formerly served by Wheeler Creek which will now become inaccessible because of the Silvia Hollow drift fence.

The proposed action would employ an additional, adaptive management strategy which allows for adjusting the timing, intensity, frequency and management of grazing as needed to meet Forest Plan standards and guidelines. Monitoring would determine the need and frequency for administrative adjustments in the timing, intensity, frequency, and/or management of grazing.

2.4.2.1 Details of the Proposed Action

The proposed action employs an adaptive management strategy which would adjust the timing, intensity, frequency and management of grazing on the allotment as needed to 1) meet Forest Plan standards and guidelines, and 2) to meet or satisfactorily move forest resources toward desired conditions and meet Forest Plan objectives. Monitoring would determine the frequency for administrative adjustments in the timing, intensity, frequency, and/or management of grazing. The following sections of this document outline site-specific management principles, limits and direction for the proposed action.

Site-Specific Desired Future Conditions

Desired conditions for the management areas applicable to the Woodruff and Dairy Ridge Cattle Allotments are found in the Forest Plan, Bear Management Area (pages 4-119 through 4-127). In accordance with direction in the Forest Plan (see Forest Plan Appendix X-5), the interdisciplinary team (ID Team) has reviewed and in some cases refined or supplemented the Forest Plan prescribed Desired Future Conditions (DFCs) to be more specific to the project area and the proposed action. The refinements/supplements are consistent with the Forest Plan prescribed DFCs, and are outlined in the following table:

Table 2.4.2.1: Additional Site-Specific Desired Conditions

Resource Ecosystem Community Type	Applicable Component of the Forest Plan Prescribed Desired Future Condition	Additional Site-Specific Desired Condition
Soil productivity	Most soils have at least minimal protective ground cover. Soils have adequate physical properties for vegetative growth and soil-hydrologic function. Degradation of soil quality and loss of soil productivity is prevented. Soil productivity, quality, and function are restored where adversely impaired and contributing to an overall decline in watershed condition.	Minimal protective ground cover is defined by Forest Plan standard S7 as at least 85% of potential. In tall forb communities minimum ground cover is defined by Guideline G14 as at least 90% of potential. (see S7 and G14 in Section 2.5 of this EA). The Forest Plan (p. VII-1) identifies the following minimum ground covers (85% of potential) for some of the vegetative types in the project area: • 76-82% silver sagebrush • 69-82% in few-flowered-sagebrush

Resource Ecosystem Community Type	Applicable Component of the Forest Plan Prescribed Desired Future Condition	Additional Site-Specific Desired Condition
		• 59% in low sagebrush • 78% in snowberry • 60-70% in curlleaf mountain mahogany • 77-83% in aspen Applying the direction above, the ID team determined that for this allotment the desired condition is to maintain at least the following average ground covers (% of potential) in vegetation communities impacted by livestock grazing: • 78% in aspen, silver sagebrush and mountain brush communities. • 69% in few-flowered sagebrush • 60% in low sagebrush and curlleaf mountain mahogany • 73% in mountain big sagebrush (potential is 81 to 96%; as reported in the North Rich Allotment FEIS potential there was 86%. The potential for these communities on these allotments is similar). • 85% in mesic riparian vegetation types.
Riparian areas	Riparian areas have a range of vegetative structural stages that are at or moving toward properly functioning condition, provide a transitional zone between upland terrestrial habitats and aquatic habitats, and have the features necessary to promote stable stream channels and diverse habitat conditions. Desirable riparian vegetation occupies the historical floodplain. Riparian areas provide for fish, wildlife, and water quality requirements.	The Class I riparian area within the project area listed in the Forest Plan is: Sugar Pine (USFS 2003, LRMP p. VII-7). In addition to the riparian area identified in the Forest Plan and listed above, in accordance with Forest Plan direction (p. VII-3) the ID Team has identified other Class I riparian areas. For specific locations, see Map, Appendix A of this EA. No Class II riparian areas within the project area are identified in the Forest Plan (USFS 2003, p. VII-7). In accordance with Forest Plan direction (p. VII-3), the ID Team has

Resource Ecosystem Community Type	Applicable Component of the Forest Plan Prescribed Desired Future Condition	Additional Site-Specific Desired Condition
		identified Class II riparian areas: For specific locations, see Map, Appendix A of this EA. All riparian areas not identified above as Class I or II are Class III riparian areas.
Springs and wetlands	Spring sources and associated wetlands in the Cache Box Elder Management Area will be protected from excessive use and will be restored to proper functioning. Riparian areas will be protected from overuse and trampling from livestock grazing and recreation uses. Spring sources will be fenced and provide water for livestock.	Existing livestock spring/wetland protection fences will be maintained in order to protect vegetation, water quality and habitat associated with these areas. Riparian areas will have adequate deep-rooted vegetation or armoring along banks to allow for sediment filtering and erosion prevention. Proper function of wetlands and riparian areas associated with springs will be maintained to meet or exceed conditions outlined in Forest Plan standards and guidelines S24, S25, S26, G4 and G7 (see Section 2.5 below).
Aquatic Habitats	Habitats will be managed to maintain cool, clear water and well-vegetated stream banks for cover and bank stability. Cool water temperatures will be preserved through well-vegetated banks.	Undisturbed stream banks exist on at least 80% of Class I riparian areas. Pool-riffle ratios are approximately 1:1 in fish-bearing streams. Summer water temperatures in fish-bearing streams do not exceed 20°C.
Aspen	Associated herbaceous and woody vegetation is in aspen communities is highly variable and is dominated by desired perennial grasses and forbs with a range of shrub cover.	At least 10% of the understory cover in aspen communities is comprised of desired tall forb species[1].

[1] Plant species listed as moderate or high value rating for erosion control/watershed protection in the Region 4 Forest Service Handbook 2209.21 – Range Management Resource Value Ratings Guide.

Resource Ecosystem Community Type	**Applicable Component of the Forest Plan Prescribed Desired Future Condition**	**Additional Site-Specific Desired Condition**
Upland vegetation and big game winter range	Maintain upland (sagebrush, mountain brush, grassland) plant communities are dominated by desired perennial grasses, forbs, and have a range of shrub cover. Associated herbaceous and woody vegetation provides for plant communities that are diverse in seral status and structure and provide food and habitat for wildlife, forage for livestock, and a variety of recreational opportunities and aesthetic values.	• A wide variety of sagebrush cover closures exist, with a maximum closure of 35%. • Most (greater than 50%) vegetation cover in sagebrush stands are desired grass and forbs. • Snowberry, serviceberry, chokecherry, and elderberry are present in mountain brush communities.
Riparian vegetation	Riparian areas have a mix of seral and climax vegetation that is at or approaching PFC. Trees, willows, dogwood, birch, alder, sedges, rushes and hydric grasses, depending on stream substrate, gradient, and elevation, dominate riparian areas. These areas provide healthy self-perpetuating plant communities. Riparian plant habitats and rare riparian species will be protected from trampling and overuse by livestock grazing and recreational uses.	Adequate vegetative cover (as defined by the heights prescribed in Forest Plan standards S24 and S25) provide filtering of runoff, protection of the soil, and habitat for wildlife in riparian areas. Riparian shrub and trees are perpetuated by retaining at least 50% of annual growth of these plants (i.e., as provided for in Forest Plan standard S26 [see Section 2.5 of this EA]).
Rangeland/Livestock Grazing	Livestock grazing is a permitted use. Grazing levels will be adjusted and managed with up-to-date Allotment Management Plans (AMPs). AMPs prescribing rest and deferred rotation grazing systems and riparian pastures will be in place. Structural improvements such as fences and water developments will be constructed or reconstructed and maintained to improve animal distribution and control.	Grazing levels will be adjusted and managed with an up-to-date Allotment Management Plan (AMP) that prescribes grazing systems and establishes management that ensures the time and timing of grazing is altered annually. When and/or if needed, structural improvements such as fences and water developments will be constructed or reconstructed and maintained, to improve animal distribution and control.

Resource Ecosystem Community Type	Applicable Component of the Forest Plan Prescribed Desired Future Condition	Additional Site-Specific Desired Condition
	Structural improvements that are not needed will be removed from the forest. Grazing permit holders will move livestock as needed to meet management objectives for the ground. Ongoing ecosystem monitoring will be used to refine standards. Permit holders will share responsibility with the Forest Service for monitoring use, and will hold full responsibility for movement and control of livestock. Excess and unauthorized livestock use will be minimal. The number of term grazing permits will be reduced by the formation of grazing associations and the issuance of grazing agreements instead of individual permits.	

The proposed action would incorporate the following parameters designed to allow for improved range conditions on both upland and riparian sites:

Grazing Season
The specific grazing season would vary from year to year, but would generally fall between July 1st and September 15th. Turnout would not occur before *range readiness*—that point in the plant growth cycle at which grazing may begin without permanent damage to vegetation or soil. The grazing season would generally end before the start of the rifle deer and elk hunting season. Annual adjustments are authorized by the District Ranger in the Annual Operating Instructions (AOI's).

Grazing Strategy
Under the proposed action, a rotational, deferred grazing management system (or other adaptive management strategy that ensures the time and timing of grazing use is altered on an annual basis) would be employed. Grazing on about two-thirds of the allotment would be deferred annually until after seed ripe.

Intensity
The intensity of grazing (utilization) would be according to grazing utilization standards and guidelines described in the Forest Plan. The applicable standards for grazing use under the proposed action would be as described in Section 2.5.

Some areas near water in the allotments exhibit signs of use in excess of the Forest Plan standards, indicating a need for better cattle control. Implementation of the proposed action would require cattle to be moved out of riparian areas before the 5-inch stubble height is reached. In addition, upland, aspen and riparian areas (away from the greenline) identified as being in unsatisfactory condition are restricted to 30-40% utilization.

Annual forage utilization is measured by averaging the use of key species in key areas based on the measurement of typically 50 to 100 individual plants. Key areas are defined as "a relatively small portion of rangeland which because of its location, grazing or browsing value and/or use, serves as a monitoring and evaluation site" (FSH 2209.21). The proposed action identifies the following "key areas" (at a minimum) to be monitored for annual utilization and long-term trend. Note that key areas and monitoring protocols can be changed or substituted without additional site specific NEPA.

Key Area Name Monitoring type (ecosystem type)[2]

1) Silvia Hollow-MIM[3] (riparian)
2) Peggy Hollow-MIM[3] (riparian)
3) Peggy Hollow Bench-utilization (upland)
4) Red Rock Springs-utilization (ponds/seeps)
5) Wheeler Creek below Ranger Hollow-stubble height (ponds/seeps)
6) Swan Spring-utilization (ponds/seeps)
7) 1of 18 permanent aspen plots rotated annually-utilization (upland)
8) 1 of the permanent sagebrush plots rotated annually-utilization (upland)

Frequency
The frequency of grazing any certain area will be one time per season. Cattle would not be allowed to re-graze either upland or riparian sites where utilization had already been met. This means that cattle would be managed to ensure that grazing of re-growth of native perennial grass species during the same grazing season does not occur.

Adaptive Management
The proposed action employs an adaptive management strategy, which allows for adjustments in the timing, intensity, frequency and management of grazing on the allotment to meet Forest Plan standards and guidelines and move forest resources toward desired future conditions. Monitoring would determine the need and frequency for administrative adjustments in the timing, intensity, frequency, and/or management of grazing. Adaptive management involves

[2] Note: Key monitoring areas can be changed without additional NEPA documentation.
[3] Multiple Indicator Monitoring, Burton, Tim, Steven Smith and Ervin Cowley. 2008. Monitoring Stream Channels for Riparian Vegetation – Multiple Indicators. Version 5.0

identification of future management options that may be needed to accelerate or adjust grazing management. Building adaptive management flexibility into management allows for decisions that are responsive to needed adjustments in permitted actions (FSH 2209.13 Section 92.23b).

Adaptive management strategies

Implementation of the proposed action would include an adaptive management strategy. If monitoring indicates changes are needed, other adaptive management strategies to achieve the objectives of the proposed action would include:

Livestock Grazing Management Actions[1]
Use of salt or supplement to draw livestock toward or away from specific areas.
Change season of use.
Change animal numbers.
Change animal class.
Change number of days of livestock utilization.
Rest from livestock grazing for one or more seasons.
Construct fence[2] to create riparian unit and allow livestock grazing under riparian grazing guidelines.
Construct fence[2] to exclude livestock from areas of concern (riparian, streams, springs, wetlands, mesic meadows, etc.).
Construct temporary electric fence or permanent fence[2] to control livestock distribution patterns.
Construct livestock water development[2] (pipeline, tanks, windmill, sediment traps, well, stock dam, submersible pumps, solar).
Remove existing water development (pipeline, tanks, windmill, well, stock dam).
Remove existing fence line (electric, standard, permanent or temporary).
Implement multi-pasture, deferred livestock grazing system.
Implement a high-intensity/short duration livestock grazing system (by riding, herding, temporary fence, etc.).
Implement rest-rotation livestock grazing system.

[1] The potential management actions are designed to be used either alone or in combination to best meet, or at least, move toward the desired resource condition within a timeframe of about ten years.
[2] Other than the Silvia Hollow drift fence and the Ranger Hollow water system, permanent fences and water improvements would not be constructed without additional NEPA analysis.

2.5 Mitigation and Management Requirements

Mitigation measures, Best Management Practices (BMPs), and Forest-wide standards and guidelines included in all action alternatives are listed below. Research and information substantiating these requirements are found in the Forest Plan and FEIS (USFS 2003).

2.5.1 Management Requirements

The Forest Plan (USFS 2003, p. 4-36 thru 4-56 and 4-58 thru 4-78) contains standards and guidelines (see LRMP, p. 3-36 for definition of these 2 terms) including some applicable to livestock grazing. Those pertinent to the project area and this environmental analysis are summarized below in Table 2.5a.

In order to address unsatisfactory conditions and resource concerns associated with the presence of bare ground in the aspen vegetation type, the proposed action would implement a utilization level of 35% for aspen areas within the allotments (see Guideline 71 below). This lower level of utilization—combined with a grazing system that manages the 2 allotments as a 3-pasture unit, where two of the three pastures are annually deferred—is expected to lead to improved range conditions on upland areas in the aspen vegetation type. This feature will help direct resource conditions in the aspen vegetation type toward the desired future condition.

Standard (S) 24 below refers to aspen stands in satisfactory condition. Because aspen stands in the allotment are not in satisfactory condition, a lower utilization standard is proposed as a mitigation measure to direct the aspen vegetation type toward the desired future condition. As future monitoring in aspen areas shows satisfactory conditions in ground cover, a return to 50% utilization level would be possible

Table 2.5a: Forest Plan (LRMP) Standards (S) that apply to this project.

(S4) Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or ground water. (LRMP, p. 4-36)

(S7) Allow management activities to result in no less than 85% of potential ground cover for each vegetation cover type. (LRMP, p. 4-37). (See LRMP, Appendix VII for potential ground cover values by cover type).

(S24) As a tool to achieve desired conditions of the land, maximum forage utilization standards for vegetation types in satisfactory condition using traditional grazing systems (rest rotation, deferred rotation, season long) are as follows:

Table S24: Percent utilization of key grass or grass like vegetation, by vegetation type, for rangelands in satisfactory condition.

Vegetation Type	Condition	Percent Utilization of Key Grasses or Grass-Like
Upland and Aspen	Satisfactory	50%
Crested Wheatgrass	Satisfactory	60%

Riparian* Class I	Satisfactory	50%
Riparian* Class II & III	Satisfactory	60%

* Riparian, away from greenline

(S25) As a tool to achieve desired conditions of riparian areas, maximum forage utilization standards (stubble height) for low to mid elevation *greenline* species in Class I, II, and III riparian areas (see Appendix VII) in satisfactory condition are as follows: (Key species being grazed include water sedge, Nebraska sedge, and and/or wooly sedge.)

Table S25: Greenline stubble height at the end of the growing season, by riparian class, for rangeland satisfactory condition.

Vegetation Type	Condition	Greenline Stubble Height at End of Growing Season
Riparian Class I	Satisfactory	No less than 5”
Riparian Class II	Satisfactory	No less than 4”
Riparian Class III	Satisfactory	No less than 3”

(S26) For all rangelands, including big game winter range and riparian areas, permit no more than 50% of the current year’s growth on woody vegetation to be browsed during one growth cycle (i.e., when use has reached 50% allow no additional livestock use). (LRMP, p. 4-52)

Table 2.5b: Wasatch-Cache NF Guidelines (G) that apply to this project.

(G3) Proposed actions analyzed under NEPA should adhere to the State Nonpoint Source Management Plan to best achieve consistency with both Sections 313 and 319 of the Federal Water Pollution Control Act. (LRMP, p. 4-37)
(G4) At the end of an activity, allow no more than 15% of an activity area to have detrimental soil displacement, puddling, compaction and/or to be severely burned. (LRMP, p. 4-37)
(G7) Manage Class 1 Riparian Area Greenlines for 70% or more late-seral vegetation communities as described in Intermountain Region Integrated Riparian Evaluation Guide (USFS, 1992). Manage Class 2 Riparian Area Greenlines for 60% or more late-seral vegetation communities. Manage Class 3 Riparian Area Greenlines for 40% or more late-seral vegetation communities. (LRMP, p. 4-37)
(G9) Avoid soil disturbing activities (those that remove surface organic matter exposing mineral soil*)* on steep, erosive, and unstable slopes, and in riparian, wetlands, floodplains, wet meadows, and alpine areas. (LRMP, p. 4-38)
(G11) Use Best Management Practices & Soil & Water Conservation Practices during project assessment/ implementation to ensure maintenance of soil productivity, minimization of sediment discharge into streams, lakes and wetlands to protect designated beneficial uses (LRMP 4-38)
(G12) Locate new actions (such as incident bases, fire suppression camps, staging areas, livestock handling facilities, recreation facilities, roads and improvements) outside of Riparian Habitat Conservation Areas. If the only suitable location for such actions is within Riparian Habitat Conservation Areas, sites will be located to minimize resource impacts (LRMP, p. 4-38)

(G15) In goshawk habitat, design management activities to maintain, restore, or protect desired goshawk and goshawk prey habitats including foraging, nesting, and movement. (LRMP, p. 4-42)
(G23) Avoid actions on the Forest that reduce the viability of any population of plant species classified as Threatened, Endangered, Sensitive or recommended sensitive. Use management actions to protect habitats of plant species at risk from adverse modification or destruction. For species that naturally occur in sites with some disturbance, maintain the appropriate level of disturbance. (LRMP, p. 4-43)
(G71) As a tool to achieve rehabilitation of upland, aspen, and riparian communities away from the greenline that are not meeting or moving toward objectives, maximum allowed forage utilization will be 30-40%.(LRMP, p. 4-52)
(G72) Modify grazing practices that prevent attainment of desired future conditions for vegetation and/or aquatic resources. (LRMP, p. 4-52)
(G75) Annual operating instructions (and/or Allotment Management Plans) should be evaluated and additional site-specific objectives defined if needed for any or all of the following five parameters: ▪ stubble height on selected key species on the greenline, ▪ stubble height on selected key species and/or the amount of bare ▪ ground within the riparian zone but away from the greenline, riparian woody browse utilization (trees and shrubs), ▪ stream bank trampling on key reaches, and ▪ stubble height and/or incidence of use on key species in the uplands. (LRMP, p. 4-52)
(G2.6-2) Grazing is allowed on open allotments to meet site-specifically defined desired conditions. (LRMP, p. 4-67)
(G3.1A-2) Livestock grazing is allowed with the utilization standard for Riparian Class 1, and to meet site-specifically developed desired conditions. (LRMP, p. 4-69)
(G4.4-2) Grazing is allowed on open allotments to meet site-specifically defined desired conditions. (LRMP, p. 4-69)

(G14) Manage vegetation for properly functioning condition at the landscape scale. Desired structure and pattern for cover types of the Wasatch-Cache National Forest (from USFS 1996) … are as follows … (USFS 2003, LRMP p. 4-39 thru 4-42)

Table G14. Desired Structure and Pattern for Cover Types

Cover Type	Landscape Structure	Landscape Patterns
Aspen	Balanced Range: Grass/Forb and Seedling/Sapling = 40 % Young, Mid Aged and Mature forests = 30% Old Forests = 30% Stand Density Index > 300 and Basal Area < 140.	Patterns are within historical ranges. Pattern sizes, shapes and corridors are maintaining processes. The role of fire is to influence distribution of structural classes and patterns across landscapes.
Pinyon-Juniper	Guideline direction for this cover type is not shown here as this cover type is not applicable in this project area.	

Mountain Mahogany	Guideline direction for this cover type is not shown here as this cover type is not applicable in this project area.	
Tall Shrub (Mountain Brush)	Multiple vegetation layers with alternating vertical dominance.	Acreages and dispersion within historical ranges.
Sagebrush(Big)/Grassland	Balanced range of structural stages. 40% of area with 15% or more crown cover (as measured by line intercept method).	Patterns are within the historical range.
Riparian	Amount and type of vegetation types present that maintain riparian-dependent resources and provide a high rate of recovery following disturbance.	Plant community type compositions and accompanying riparian ecosystem functions maintain proper ground water recharge, storage, delivery, water tables, channel morphology and bank stability.

2.6 Monitoring Activities

The following monitoring activities would be conducted by the Forest Service to evaluate range conditions and to ensure compliance with the grazing permit and management requirements listed above.

(1) Livestock management

What: Monitor livestock distribution to ensure livestock are in areas authorized for grazing.

Why: To protect unauthorized areas from livestock grazing to help achieve desired conditions.

How often*:* Throughout the grazing season

How the results will be used: Information would be documented and shared with the permittees to ensure livestock are in the proper locations. If livestock are found in an unauthorized area it would be considered non-compliance and appropriate administrative action would be taken according to Forest Service Handbook direction (FSH 2209.13, Chapter 10, section 16).

(2) Annual upland and riparian utilization and use

What: Annual monitoring will include collecting and recording the following information:

a. Annual utilization on upland and riparian key areas, including:
1) Silvia Hollow-MIM (riparian)
2) Peggy Hollow-MIM (riparian)
3) Peggy Hollow Bench-(upland)
4) 1 of the permanent sagebrush plots (Williams 2003)-rotated annually (upland)

b. Annual utilization near ponds, seeps, and springs:
1) Red Rock Springs-utilization (ponds/seeps)
2) Wheeler Creek below Ranger Hollow-stubble height (ponds/seeps)
3) Swan Spring-utilization (ponds/seeps)

c. Annual utilization in aspen:
1) Stands to monitor include #1, 5, 6, 15, 35 (from Williams 2003 Study); 1 stand each year, rotated to the next one every second year; utilization threshold is 35% (rangelands in unsatisfactory conditions, per Forest Plan Guideline G71)

Why: To maintain proper livestock distribution and ensure utilization standards are not exceeded, in order to maintain satisfactory conditions, improve unsatisfactory conditions, and help move toward desired conditions.

How often: Utilization and livestock distribution during and at the end of the grazing season.

How the results will be used*:* The information will be used to determine when livestock must be moved from one area to another or off the allotment after all areas have been grazed, and to make any necessary adjustments to numbers and/or season of use.

(3) Long-term upland condition and trend

What: Long-term trend monitoring will be conducted on some of the previously established long-term study sites. Additional sites may be determined through field assessment.

Why: To evaluate vegetation conditions and identify whether or not they are at or moving toward desired conditions in riparian and upland areas.

How often: About every 10 years.

***How the results will be used**:* Information will be used to determine if the area is meeting or moving toward desired conditions. Long-term trend data will be used to evaluate timing, intensity, frequency and management of grazing. As necessary, annual triggers affecting the timing, intensity, frequency and management of grazing would be adjusted to meet long-term desired resource conditions.

a. Aspen long-term trend monitoring
   1) Include one of the following: #1,5,6,15,35 (from Williams 2003 Study); 10-year intervals; monitor ground cover and species composition

   Threshold:
   - At least 10% of the understory cover in aspen communities is comprised of desired tall forb species
   - 78% ground cover or better

b. Sagebrush/mountain brush long-term trend monitoring
   1) Include one of the sagebrush plots from the Williams 2003 Study; 10-year intervals; monitor ground cover and species composition
   2) Peggy Hollow Bench; 10-year intervals; monitor ground cover and species composition
   3) Include an upland site near one of the pond/seep utilization monitoring areas; 10-year intervals; monitor ground cover and species composition

(4) Riparian area/water/aquatic habitats

What: Multiple Indicators Monitoring System (MIMS) on the following:
1) Silvia Hollow
2) Peggy Hollow
3) Wheeler Creek below Ranger Hollow

Why: To ensure that riparian environments are protected from trampling and vegetation loss and that water quality and aquatic habitats are maintained.

How often:
- Annual protocol: Stream-bank alteration and green-line utilization
- Every 5-10 years: other MIM protocols, as needed, for long-term monitoring of riparian areas/water/aquatic habitats

***How the results will be used**:* The information will be used to evaluate movement toward desired conditions in riparian areas. If monitoring indicates that degraded riparian areas are developing and/or existing degraded riparian areas have not improved in condition (using indicators such as increased riparian vegetation diversity and structure, streambank disturbance, and channel width) then an alternative management strategy such as fencing key riparian areas would be implemented. Fencing would require further NEPA analysis on the site-specific environmental effects of the fencing.

Table 2.7 Comparison of differences among Alternative 1 (No Action - No Grazing), and Alternative 2 (Proposed Action)

	Alternative 1 (No Action - No Grazing)	**Alternative 2 (Proposed Action)**
Permitted Numbers	Same as Alternative 2 until grazing is eliminated from the allotment, then no grazing	Woodruff - 554 cow-calf pairs Dairy Ridge - 100 cow-calf pairs
Grazing System	No grazing	Woodruff - Deferred rotation, managed together with Dairy Ridge Allotment as three pastures between the two allotments Dairy Ridge - Deferred rotation, managed together with Woodruff Allotment as three pastures between the two allotments
Grazing Season	Same as Alternative 2 until grazing is eliminated, then no grazing	Woodruff - July 1st -September 15th Dairy Ridge - July 1st -September 15th
Utilization	Same as Alternative 2, until grazing is eliminated, then no grazing	50 percent use on uplands in satisfactory condition; 35% use on aspen uplands in unsatisfactory condition; riparian greenline stubble heights at the end of the growing season of 4-5 inches on Class 2 riparian areas and 5-6 inches on Class 1 riparian areas

2.8 Comparison of Effects of Alternatives

Table 2.8 Comparison of the effects of Alternative 1 (No Grazing) and Alternative 2 (Proposed Action)

Resource	Alternative 1 (No Grazing)	Alternative 2 (Proposed Action)
Aquatic species and their habitat	For the Bonneville cutthroat trout a determination of "no impact" was made. Improvements will occur quickly to wetlands and streams outside riparian protective fencing. Fish populations in Wheeler Creek and Sugar Pine Creek will continue to persist in the long-term.	For the Bonneville cutthroat trout a determination of "may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species" was made. With the implementation of the deferred rotation some trampling and grazing of stream banks and wetlands would continue to occur, however, only approximately one third of the allotment would be grazed at any time allowing fewer impacts to occur and more time for recovery. Improvements observed would likely be limited and slow over the next 3 – 5 years.
Rangeland vegetation	The condition of the upland vegetation across both allotments is expected to continue to improve slowly. Where a diversity of species still exist, results would be better than in areas such as those dominated by tarweed or dense sagebrush. These sites would require additional restoration	Upland and riparian communities that are in satisfactory condition would remain in satisfactory condition. Aspen areas in unsatisfactory condition would be managed at a lower utilization level until conditions improved. Ground cover in the Aspen communities should improve much faster than the species composition. Areas that have already crossed a threshold, such as those dominated by tarweed or dense sagebrush would require additional restoration to return to a more desirable condition.
Recreation Experience	There will be no grazing conflicts with recreation or manure in dispersed campsites. Grazing induced resource impacts will decrease over time.	The recreation experience in the allotments may be improved by reducing the resource impacts viewed by recreating visitors to the area. It may also improve the visitor experience by reducing animal drift into high value recreation areas such as Dairy Ridge Road and dispersed camp sites along all the roads.
Soil Quality and Condition	With complete rest from grazing it is expected that ground cover would quickly improve in these aspen areas. Improvements to soil quality, such as re-accumulation of lost organic matter, would take considerably longer. The limited grazing impacts on soil quality within the sagebrush grass cover types would continue	Lower utilization standards for the unsatisfactory condition aspen areas will be implemented and a deferred pasture grazing system will be applied. As a result of these changes, it is assumed that an upward trend in ground cover, species diversity, and general soil quality will occur. The aspen cover types will eventually return to satisfactory condition

Resource	Alternative 1 (No Grazing)	Alternative 2 (Proposed Action)
Water resources	With the removal of livestock grazing, it is expected that improvements in stream channel shape and water quality would occur within a couple years along 3.9 miles of perennial stream channel in those areas that are not currently fenced in exclosures. About 40.5 acres of wetlands outside of fenced exclosures that are located along perennial streams, seeps, and springs are expected to improve from the removal of trampling by cattle. No effect to floodplains or municipal watersheds.	As part of the adaptive management strategy a drift fence may be constructed to keep cattle from grazing in Silvia Hollow. This would result in improvement to a portion of the perennial stream channel and water quality on the allotment. The remaining perennial stream channel conditions and water quality are good and would remain in that condition. No effect to floodplains or municipal watersheds.
Threatened, endangered, proposed, and candidate wildlife species and their habitats	For lynx, elimination of grazing would result in the greatest positive effect on available forage and cover and prey species abundance and diversity.	A finding of "may affect individuals, but is not likely to adversely affect the lynx or its habitat" has been given for the lynx. A finding of "no effect" has been given for the yellow-billed cuckoo and black-footed ferret..
Wildlife Management Indicator Species (MIS) species and their habitats	Positive effect to goshawk and snowshoe hare..The potential for small mammal diversity and overall species abundance is improved because grazing would be eliminated under this alternative. With improvements to riparian area changes in beaver occupancy could occur, though large increases in the beaver population are not likely due to limited habitat.	The effects on MIS species (northern goshawk and snowshoe hare) are related to effects on small mammals. Livestock grazing under this alternative would continue to affect the goshawk prey species that require high levels of litter and residual vegetation. Livestock grazing may influence goshawk nest success and nestling survival due to reduced numbers of prey species. Cattle grazing would continue to impact snowshoe hare by reducing cover and forage vegetation within the portions of the allotment outside of conifer vegetation type. Beaver numbers are not likely to change from current condition.
Sensitive wildlife species and their habitat	Potential effects to habitat for sensitive species are related to potential effects on their prey species. Potential effects to prey species and their habitat would be slightly improved as grazing is eliminated from the allotment.	For sensitive species a finding of "may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species" is given for the northern goshawk, greater sage grouse and flammulated owl. A finding of no impact is given to western big-eared bat, three toed woodpecker, wolverine, boreal owls, and great gray owl. No habitat and no effect to sharp-tailed grouse, peregrine falcon, pygmy rabbit, Rocky Mountain bighorn sheep, or the spotted bat.

Chapter 3 - Affected Environment and Environmental Consequences

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives. The section is organized by resource. Within each section, the affected environment is briefly described, followed by the environmental consequences (effects) of implementing each alternative.

3.1 Introduction

The Woodruff and Dairy Ridge cattle allotments are at the eastern edge of the Wasatch Mountain Range, located in Rich County. The allotments generally feature rolling mountains and long ridges, cut by moderately steep drainages. Much of the terrain in the allotments is covered by aspen forest and sage/grasslands, with conifer forest covering the rest. The area's vertebrate, aquatic, and plant life, has been studied extensively by Forest biologists. The areas where the allotments are located are used for motorized and non-motorized, as well as dispersed and concentrated recreation activities.

3.1.1 List of Past, Present, and Reasonable Foreseeable Future Actions

Table 3.1 shows the actions considered in the cumulative effects disclosure within each resource section in Chapter 3. Past, present, and on-going activities have resulted in the resource's existing condition. Reasonably foreseeable future actions are also considered. As applicable to each resource, these conditions, actions, and effects are described in Chapter 3.

Table 3.1 Past, present and ongoing, and reasonably foreseeable activities within the analysis area

PAST ACTIONS		
Action	**Description**	**Date**
Livestock Grazing	Historic sheep grazing	1800s-early 1900s
Riparian Fencing	Wheeler Springs riparian area was fenced off (to exclude livestock use)	2005
PRESENT AND ONGOING ACTIONS		
Action	**Description**	**Date**
Livestock Grazing	Cattle grazing on the Woodruff and Dairy Ridge allotments and the adjacent Monte Cristo sheep allotments. Also livestock grazing on adjacent private lands to the west of the allotments and to the east of the allotments is ongoing.	On-going
Private Property development	Private lands are located to the east and west of the sheep allotments.	On-going
Roads and Trails;	The most recent Travel Plan for the Ogden District was	On-going

Motorized Recreation Use and Dispersed Camping Use	approved in 2007. There are few roads designated as open in this area. Roads not open in the Travel Plan continue to be decommissioned through road obliteration, seeding, and signing. Unauthorized use of closed roads and trails continues to occur. There are a number of high-value dispersed camping sites along Dairy Ridge Road and Baldy-Wheeler Road. Horseback riding, big game hunting, and camping continue to occur in the area.	
Fire Suppression	Active fire suppression of human-caused fires. Lightning fires within wildland fire use consideration areas may be managed as wildland fire use	Ongoing
Noxious Weeds Treatment	Treatment of noxious weeds according to the WCNF Noxious Weed EIS/ROD	Ongoing
REASONABLY FORESEEABLE ACTIONS		
Action	**Description**	**Date**
Dairy Ridge Sagebrush Treatment Project	Mechanical or chemical treatment of decadent sagebrush growth is being considered for areas on the Dairy Ridge cattle allotment.	Within 5 years

3.2 Aquatic Resources

3.2.1 Affected Environment

Stream Habitat Conditions - Site visits to Silvia Hollow, Wheeler Creek, and Sugar Pine Creek in August and October of 2008, generally found stream conditions in good condition along much of Wheeler Creek, Sugar Pine Creek, and most of Silvia Hollow as indicated by dense, deep-rooted vegetation such as willows and sedges. Large cobbles and boulders also help stabilize much of this area. However, riparian conditions along portions of Silvia Hollow were in poor condition (bare stream-banks, heavy utilization of remaining vegetation) due to cattle grazing. Currently, limited allotment boundary fence occurs between the Bountiful Sheep and Dairy Ridge Cattle Allotments making livestock management difficult. In addition, inadequate ground cover exists in areas surrounding most ponds, springs, and some streams, including Peggy Hollow (outside riparian protection fencing areas) and upper Sugar Pine. Little to no re-growth was observed along most springs, ponds, and riparian areas associated with these water sources. However, in several cases, grasses appeared ungrazed in areas more than 500 yards from water sources, indicating cattle seldom moved far from these water-related sites.

Habitat information collected in 2006 during Management Indicator Species (MIS) monitoring found some improving conditions. The riparian fencing project at Wheeler Creek has led to improved bank stability, reduced sedimentation and increased willow recruitment. Similarly, the large riparian protection fences around Sugar Pine Creek and two others around portions of Peggy Hollow have improved habitat conditions along these streams. A large beaver complex along Wheeler Creek has also improved Bonneville cutthroat trout (BCT) habitat. The temperature reading of 21°C found at Sugar Pine is slightly above the optimal temperature for BCT of 20°C.

A total of 14.7 miles of stream occur within the Woodruff and Dairy Ridge Cattle Allotments of which 10.6 miles are ephemeral. Four streams with perennial flows occur within the allotments, for a total of 4.1 miles of perennial stream. The perennial flows occur in Silvia Hollow/Wheeler Creek, Peggy Hollow, and Sugar Pine Creek. Most of Silvia Hollow is located in the Bountiful sheep allotment but is grazed by cattle due to lack of adequate fencing. Approximately 17 springs and 27 stock ponds are found within the allotments. A total of 2.45 miles of stream supports fish within these allotments, all of which occur in Management Prescription 3.1a. Silvia Hollow/Wheeler Creek and Sugar Pine all support Bonneville cutthroat trout (BCT).

Amphibian surveys were conducted on the Ogden Ranger District during the summers of 2001 through 2006 and monitoring of known boreal toad (*Bufo boreas boreas*) locations occur annually. Boreal toads are a State of Utah sensitive species. Boreal toad and tiger salamander (*Ambystoma tigrinum*) were found on these allotments (Thompson and Chase 2001, Thompson and Chase 2003, Thompson and Chase, 2005, Thompson et. al, 2003). Boreal toads were found at three locations on the Woodruff Allotment and other known locations occur to the North. Tiger salamanders are common throughout suitable habitat in Utah. Heavy livestock grazing and trampling has reduced riparian vegetation around most ponds and springs on the Woodruff and Dairy Ridge Allotments, resulting in poor aquatic habitat conditions in these locations. Conditions at most springs and ponds were poor because of inadequate ground cover, with the exception of Red Rock Spring which has a riparian protection fence around it.

3.2.1.1 Threatened, Endangered, and Sensitive Aquatic Species - According to the U.S. Fish and Wildlife Service (Utah Field Office) March 2009 *List of Endangered, Threatened, Proposed, and Candidate Species for Utah Counties* (available in the project record), no threatened or endangered aquatic species occur on the Wasatch-Cache National Forest.

The Intermountain Region Sensitive Species list was last updated in December 2003. The Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*), Bonneville cutthroat trout (*Oncorhynchus clarki utah*), and the Columbia spotted frog (*Rana luteiuentris*) are the only sensitive species listed for the Wasatch-Cache National Forest. Neither Colorado River Cutthroat trout nor Columbia Spotted Frog is found on the Ogden Ranger District. The Bonneville cutthroat trout is also a Forest Management Indicator Species and is covered in that section below.

3.2.1.2 Management Indicator Species - Bonneville cutthroat trout are one of two aquatic species identified as Management Indicator Species (MIS) in the Wasatch-Cache National Forest Plan. As the aquatic management indicator species present on these allotments, BCT will be used to represent effects of livestock grazing for other aquatic species including macro-invertebrates and mollusks.

The Woodruff Drainage (including three streams within the project area: Wheeler Creek, Silvia Hollow, and Sugar Pine Creek) supports a strong population of Bonneville cutthroat trout (known as the Woodruff Metapopulation). Sections of stream located on Forest are important for spawning and rearing for BCT with a limited amount of use by resident fish. Populations in

Wheeler Creek, Silvia Hollow, and Sugar Pine Creek were last monitored in 2006 as part of the Forest MIS monitoring protocol.

Based on the two data points collected at the monitoring station in Wheeler Creek, the Bonneville cutthroat trout population in this portion of the stream was smaller in 2006 as compared to 2000, while size and condition factor were up slightly.

The 2006 stream survey completed on Silvia Hollow resulted in the capture of no fish. Spot-shocking above and below the monitoring station also failed to capture any fish. A large natural debris dam located below the monitoring station appears to be preventing spawning adult BCT from reaching this site. A limited portion of Silvia Hollow maintains perennial flows during drought years and it was utilized as spawning and rearing habitat in 2000 for a limited number of juvenile BCT.

Based on the two data points collected at the monitoring station in Sugar Pine Creek, the Bonneville cutthroat trout population in this portion of the stream was smaller in 2006 as compared to 2000, although average size was up slightly.

While BCT populations were found to be decreasing in Sugar Pine Creek, Silvia Hollow and Wheeler Creek when last sampled in 2006, habitat conditions are currently improving along Wheeler Creek due to riparian protection fencing. Habitat conditions along much of Sugar Pine Creek are also in good condition due to riparian protection fencing and limited livestock grazing below the fencing.

Although BCT populations decreased between the 2000 and 2006 samples in Silvia Hollow and Wheeler Creek (indicating a downward trend during that period), the Woodruff Metapopulation remains strong. The reduction in BCT numbers and biomass are likely attributed to effects of the drought that occurred since the last sampling in 2000. Young of Year (YOY) and age 1+ fish were abundant at all three sample sites where fish were captured, indicating that this population is functioning well.

Habitat conditions in Wheeler Creek are improving, especially within areas of the riparian fencing. While no fish were observed in Silvia Hollow in 2006 due to a natural debris dam blocking migrating adults, this will have a limited effect on the overall population. In addition, habitat conditions along most of Silvia Hollow remain in good condition and will likely be utilized by BCT once they can navigate past the natural debris dam. Livestock exclosures have been constructed around portions of these streams and water troughs have been installed to encourage cattle to utilize vegetation away from riparian areas.

Additional information on MIS trends for the Forest can be found in the annual report, Management Indicator Species of the Wasatch-Cache National Forest (Uinta-Wasatch-Cache National Forest, 2008) available in the project record.

3.2.2 Environmental Consequences

Generally speaking, when livestock graze within riparian corridors, water quality, stream channel morphology, hydrology, riparian soils, vegetation, and fish and invertebrate diversity, abundance, and distribution will be altered. However, the degree of impact is highly variable depending on historic land uses (timber harvest, grazing, mining, road building, etc.), existing habitat conditions, watershed characteristics (stream gradient, meadow versus forest, hydrologic regime (volume, source, timing, etc.), and geologic composition/history), and current livestock practices (number of sheep, route, duration, etc.). It is important to note that the degree of impact is also highly variable both spatially and temporarily. Furthermore, most of these impacts are intertwined. For example, trampling of banks resulting in increased erosion can result in numerous impacts to fish including loss of juvenile and adult refugia, loss of pool habitat, reduction in spawning gravel quality due to increased fines, and increased water temperature.

Direct effects of grazing on stream habitat can occur when livestock feed on riparian vegetation along the bank, enter a stream to drink, or cross the stream. Livestock entering fish-bearing streams after fish have spawned can result in trampling of redds, which can destroy or dislodge eggs, and embryos (Gregory and Gammet 2009). Within the Woodruff and Dairy Ridge Cattle Allotments, eggs and embryos would be vulnerable from the time cattle enter the allotment (usually July 1) until embryos have left the gravel around the end of July in pastures that are being grazed. The exception to this would be areas inside the riparian protection fencing where little to no livestock grazing occurs (Wheeler Creek and Sugar Pine Creek). Additional direct effects can occur through the destruction of habitat when undercut banks are broken down under the weight of cattle, thereby destroying habitat.

Alternative 1, *No Action (No Grazing)*
Under this alternative, livestock would no longer be permitted to graze on the Woodruff and Dairy Ridge Allotments. Non-permitted recreational horse use could continue to occur. Range improvements such as fences would be removed from USFS lands within the allotments. The implementation of the No Action alternative would result in cattle grazing being phased out over a 2-year period after notice of cancellation. As a result, impacts associated with grazing would be temporary (0-3 years).

It is expected that improvements would occur quickly to wetlands and streams in areas outside riparian protection fencing. Fish populations in Wheeler Creek and Sugar Pine Creek would continue to persist in the long-term with natural population fluctuations occurring. Bonneville cutthroat trout are likely to utilize Silvia Hollow in the future as access past a natural debris dam in the channel occurs.

If the decision is made to discontinue grazing under this alternative, this project will have the effect of "**no impact**" for Bonneville cutthroat trout after cattle grazing has been phased out.

Alternative 2, *Proposed Action*
Based on past records (available in the project file) cattle distribution has consistently been identified as a management challenge within the Woodruff and Dairy Ridge Allotments. This is

apparently tied to a lack of water. Where water does occur, cattle often concentrate and riparian resources are impacted.

Implementation of the Proposed Action would improve existing conditions along streams, springs and ponds outside riparian protection fences from their current condition through the implementation of a deferred rotation strategy. Improvements observed would likely be limited and slow over the next 3 – 5 years. However, it is anticipated that other adaptive management strategies would be implemented (new pasture fences, spring protection fencing, rest rotation strategy, riparian protection fencing, changes in livestock numbers, herding, etc.) and improvements are likely to become more rapid. With the implementation of the deferred rotation some trampling and grazing of stream banks and wetlands would continue to occur, however, only approximately one third of the allotment would be grazed at any time allowing fewer impacts to occur and more time for recovery.

In areas located within riparian protection fencing (Wheeler Creek, Sugar Pine Creek, Peggy Hollow, Ranger Hollow, and Red Rock Spring), habitat conditions would continue to improve. A proposed drift fence on the south end of the Dairy Ridge Allotment would prevent cattle from accessing Silvia Hollow, allowing portions of this stream currently in poor condition to recover. The drift fence would discourage cattle from this area, leading to improved aquatic resources through more vegetative cover, increased bank stability, less sedimentation, and an overall improvement to habitat used by aquatic species. Impacts like those currently observed around Peggy Hollow, Ranger Hollow, and upper Sugar Pine Creek can be addressed by implementing different options available under the adaptive management strategy (such as riparian protection fencing, drift fences, herding). Baseline conditions currently functioning appropriately would likely continue to function appropriately. Several measures included in recent AOIs should be maintained, including:

- Minimum stubble height restrictions on riparian communities (no less than 5” stubble height for riparian class 1 streams);
- Maximum use restrictions on woody riparian vegetation (50% current growth);
- Limits on streambank trampling;
- Maximum use restrictions on riparian/upland vegetation (50% use in areas in satisfactory condition, 35% use in areas in unsatisfactory condition);

Under this alternative, all aquatic related standards and guidelines in the Revised Forest Plan will be met. However, impacts to fisheries would continue at some level at least as long as grazing occurred and as such would constitute a long-term (>10 years) impact to fishery resources.

Overall, if the decision is made to continue grazing utilizing an adaptive management strategy, this project will have the effect of “**may impact individuals but not likely to cause a trend to federal listing or a loss of viability**” for Bonneville cutthroat trout. The Woodruff Drainage will continue to support a viable meta-population of Bonneville cutthroat trout.

Strong populations of tiger salamanders were identified at a number of water features within the project area. For this species, it appears the grazing of cattle has had little effect. Water developments in the form of stock ponds likely provide additional habitat.

Boreal toads were found in three ponds on the allotments. Recent studies have documented different responses by amphibians due to cattle grazing (Burton et al. 2009). Cattle may negatively impact amphibians by affecting aquatic and terrestrial environments. However, it appears toads may be impacted less by environmental changes associated with cattle grazing. Allowing controlled cattle access in wetlands may even have a positive effect on Bufo sp. (Burton et al. 2009). While most areas around ponds/springs within these allotments are in poor condition, this alternative would allow them to improve (localized impacts are expected to continue around ponds constructed for livestock use). Identified key areas at three springs/ponds will allow conditions to be monitored and adaptive management options implemented. Adaptive management options, including temporary fencing, spring protection fencing, increased herding, adjusting livestock numbers/grazing season, constructing riparian protection fences, and developing alternative water sources would bring about improvement in riparian habitat conditions.

3.2.3 Cumulative Effects

The cumulative effects area for this analysis is the Woodruff River Drainage (above Woodruff Reservoir). Several other activities occur within the analysis area that have the potential to effect aquatic resources mainly by decreasing streambank stability and increasing sedimentation. These other activities include: recreation (OHV riding, hiking, fishing, and camping), livestock grazing in areas adjacent to these allotments, vegetation management, implementation of the revised Ogden Travel Plan and riparian protection fencing.

Recreational Use on the Allotments

Recreational activities of various kinds span the allotments, and recreational use is increasing as the resident and visitor populations grow. The assessment of cumulative effects on recreational resources notes that this high level of recreational use is generating notable impacts on natural resources as well as on recreation itself. These include impacts on riparian areas due to establishment of dispersed camp sites and user-developed ghost roads accessing these sites, legal and illegal ATV use, and general foot, horse, and vehicle traffic. This use intersects and contributes cumulatively to similar impacts due to grazing. In localized areas, where grazing overlaps with recreational use, this cumulative impact can be noticeable (such as at Wheeler Spring). However, the Ogden Ranger District has been actively enforcing the revised Ogden Travel Plan, closing user created roads/trails and managing recreational use within the Proposed Project Area. Recent examples include closing the Eli Ridge Road and the trail along Silvia Hollow. Currently few roads exist along or cross perennial streams on these allotments with the exception of a single crossing on Silvia Hollow.

Livestock Grazing

Livestock grazing occurs in most areas surrounding these allotments including privately owned lands. Most areas on Forest-managed lands are managed well and have little effect on erosion and sedimentation. Little is known about stream conditions associated with grazing on the privately-owned lands below Forest managed lands, however, based on UDWR sampling BCT numbers are high throughout the drainage. This contributes to the large meta-population of BCT that occurs within the Woodruff Drainage.

Vegetation Management
Several vegetation management projects are planned or have been implemented within the project area. Aspen treatment projects such as those implemented in the Monte Cristo Aspen Regeneration project included mitigation to protect area streams and aquatic resources. No aquatic impacts have been identified from the portions of the project that has been implemented. Additional burn units may be treated in the future; however, based on the identified mitigation and results from past treatments, no impacts are anticipated.

The Dairy Ridge Sagebrush Treatment Project is a recently proposed project that would occur on the Woodruff and Dairy Ridge allotments. The project is currently being designed to use fire and/or mechanical means (such as a Dixie harrow) to treat sagebrush in the uplands. Due to the distance from water, timing, and identified mitigation no impacts to aquatic resources are anticipated if this project is implemented.

Riparian Protection Fencing
Several riparian protection fences have been constructed in and adjacent to the Woodruff and Dairy Ridge Allotments. The fencing completed around Wheeler Creek in 2005 has improved riparian habitat conditions and stream conditions. The fences around portions of Sugar Pine Creek and Peggy Hollow continue to provide riparian protection to these areas. The fence around Red Rock Spring has also been successful in improving riparian conditions at a known boreal toad breeding site. In 2008, fences and offsite watering were installed in Ranger Hollow around the stream and spring sources (Dairy Ridge allotment). Ranger Hollow flows seasonally into Wheeler Creek. This fence should add additional protection to this stream. As long as these fences are maintained and functional they will continue to help improve riparian habitat conditions.

Power Line Corridor
The existing power line corridor dissects the Dairy Ridge Allotment from east to west. No impacts to aquatic resources are associated with the power line with the exception of the recent use of the corridor by ATV use. This user created trail crosses Wheeler Creek just below the riparian protection fence in Ranger Hollow. The Ogden Ranger District is currently working to close this trail through barriers and signing.

Gas Pipeline
The existing pipeline which includes expansion through the proposed Ruby Pipeline does not include any Forest-managed lands on the Woodruff or Dairy Ridge allotments. Stream crossings on private land above Woodruff Reservoir are limited to ephemeral channels and effects to aquatic resources are expected to be minimal.

3.3 Rangeland Resources

3.3.1 Affected Environment

The Woodruff and Dairy Ridge Cattle Allotments total approximately 7,470 acres. Vegetation within these allotments is composed predominately of aspen, grass/shrub communities, and conifer forests. The following table denotes the mix of vegetation types across the allotments.

Table 3.2 Approximate Acres of Vegetation Types by Allotment

Habitat Type *	Woodruff Allotment (Acres)	Dairy Ridge Allotment (Acres)	Total Acres (Percent of total)
Conifer Forest	1,227	361	1,588 (21%)
Grass/Shrubland	1,509	587	2,096 (28%)
Aspen Forest	2,886	825	3,711 (50%)
Juniper	7	70	77 (1%)
Total Acres	5,629	1,843	7,472

* Conifer Forest consists of mixed conifer, spruce/fir, Douglas-fir, lodgepole pine, and conifer/aspen vegetation types; Grass/Shrubland consists of sagebrush/grass and tall shrub vegetation types; and Aspen Forest consists of aspen/conifer and aspen vegetation types.

3.3.1.1 Range Condition and Trend

Numerous studies have been conducted over the years across the two allotments to determine rangeland condition and trend. Detailed information is available in the project file. The following summarizes this information.

Woodruff Cattle Allotment – This allotment contains a variety of vegetative community types, but primarily aspen, mixed conifer, and sagebrush dominate the area. Data from site analysis inventories and other studies conducted in the 1950s, 1960s and 1970s compared to recent monitoring indicate that range conditions are mixed, with some vegetation cover types in somewhat satisfactory condition while others are in poor condition.

Most of the older trend studies were in sagebrush sites. Additional sagebrush inventories were conducted in 2003. All 15 studies measured sagebrush canopy greater than 15%. The Forest Plan standard is 40% of area with crown cover of 15% or greater. The sagebrush communities are becoming older, thicker and more even-aged. Groundcover was adequate in all 15 sites, and species composition is adequate. The earlier trend studies generally showed the allotment to be in fair to poor condition with a downward to stable trend. Now, the sagebrush communities have adequate understory species composition; most species have a “high to moderate” Resource Value Rating (RVR) for watershed protection. However, trend is still downward to stable, at best, due to heavy sagebrush canopy cover. Without a reduction in canopy cover, it is likely that desirable species composition will decline and bare ground will increase. Sagebrush communities are in satisfactory condition but are functioning at risk.

Aspen inventories were conducted across the Woodruff Allotment in 2003. Of the 16 studies, 7 did not meet Forest Plan ground cover standards, and 7 other studies barely met standards, within 2%. Two of these sites also lacked key species, indicating poor species diversity. Additional trend sites were established in 2008 and 2009. The recent data indicates many of the aspen communities, especially on the southern half of the allotment, are in unsatisfactory condition. Ground cover is low and species composition is generally poor.

Dairy Ridge Allotment - This contains a variety of vegetative community types but aspen, mixed conifer, and sagebrush types dominate the area. Data from site analysis inventories and other studies conducted in the 1950s, 1960s and 1970s compared to recent monitoring indicate that range conditions are mixed, with some vegetation cover types in somewhat satisfactory condition while others are in poor condition.

Most of the older trend studies were in sagebrush sites. Additional sagebrush inventories were conducted in 2003. All 3 studies measured sagebrush canopy greater than 15%. The Forest Plan standard is 40% of area with crown cover of 15% or greater. The sagebrush communities are becoming older, thicker and more even-aged. Groundcover was adequate in all 3 sites, and species composition is adequate. The older trend studies began with the vegetation in poor condition with a downward trend. Now, the sagebrush communities have an improved understory species composition (most species are high to moderate RVR for watershed protection), but trend is still downward to stable at best due to canopy cover. Without a reduction in canopy cover, it is likely that desirable species composition will decline and bare ground will increase. Sagebrush communities are in satisfactory condition but are functioning at risk.

Aspen inventories were conducted across the Dairy Ridge Allotment in 2003. One of the two sites did not meet Forest Plan ground cover standards. Both of these sites lacked key species, indicating poor species diversity. Additional trend sites were established in 2008. Many aspen communities are dominated by tarweed resulting in high bare ground and low desirable species diversity. The recent data indicates most of the aspen communities in the Dairy Ridge Allotment are in unsatisfactory condition.

3.3.1.2 Grazing Suitability and Capacity

The tentative grazing capacity as determined by the 1960's range allotment analysis showed about 4,900 acres capable and suitable for livestock grazing on the two allotments in the project area. Range capability was mapped again as part of the 2003 revision of the Wasatch-Cache National Forest Land and Resource Management Plan. This mapping used the Intermountain Region's protocols (see LRMP FEIS, Appendix B9). Criteria used to identify capable rangelands in the 1960's were similar, but slightly different than those used in the analysis for the Forest Plan (e.g., the 1960's analysis included sites producing at least 50 pounds/acre/year of forage, whereas the Forest Plan included sites producing at least 200 pounds/acre/year of forage). As part of this environmental analysis, the Forest Plan capability analysis was reviewed using currently available site-specific data. This review validated the Forest Plan capability and suitability analysis. About 5,200 acres were found capable and suitable. Mapping accuracy and

allotment boundary changes account for the majority of the differences between the two inventories. See Table 3.3.

Table 3.3 Rangeland Capable Acres

ALLOTMENT	Forest Plan (2003) ACRES	REA (1960s) ACRES
Woodruff	3,833	3,052
Dairy Ridge	1,366	1,827
TOTAL	**5,199**	**4,879**

In a June 18, 2008 letter (available in the project file), Forest Service Director of Range Management Janette Kaiser notes how current thinking on use of forage factors to set range capacity has evolved: "the use of forage factors is generally only pertinent when stocking a range where there has been no livestock use or where there has been extensive management with little to no monitoring." Director Kaiser also noted: "Proper stocking rates are site-specific thus they can be highly variable. Key factors influencing proper stocking on any given parcel of land include, but are not limited to: permittee management knowledge and effectiveness, topography, water availability, plant communities and their distribution, aspect, slope, forage palatability, current year's precipitation and seasonal distribution, fire (both wild and prescribed), drought, wildlife effects, recreational activities, livestock age and size, and so forth. The bottom line is that for any given allotment, proper stocking rates can and will vary depending on these types of variables. Generally, we define the range of variability for proper stocking rates, but it is nearly impossible to pinpoint one "proper stocking rate". … "The Forest Service focuses its management on the land and vegetation rather than just on livestock needs. That is, for any given allotment, desired conditions are set. Then, criteria are established, based on the best available scientific information, which are designed to meet or adequately move the allotment toward desired conditions."

The Forest Service uses forage utilization monitoring to validate stocking rates and make adjustments when necessary. Utilization standards are developed to ensure plant vigor and productivity is maintained and/or improved. Forage utilization monitoring is the basis for making adjustments in management or stocking rates. If livestock use is consistently within forage utilization levels and soils and vegetation conditions and trends are acceptable (i.e., generally stable or moving toward desired conditions), then stocking is considered to be within capacity. If livestock use results in having to consistently accelerate the scheduled rotations through pastures or requires them to be removed from an allotment early, it is considered to indicate that stocking is outside of capacity and a need for change in the grazing capacity is appropriate. Use becomes self regulating because management is based on meeting plant and other resource needs by meeting design criteria rather than on meeting any prescribed level of use (e.g., so many Animal Units of grazing). When resource needs are not being met by the prescribed utilization standard, utilization rates are decreased and the new standard is monitored and/or grazing capacity adjusted.

3.3.2 Environmental Consequences

Alternative 1, *No Action (No Grazing)*
With the no grazing alternative, the condition of the upland vegetation across both allotments is expected to continue to improve slowly. These sites tend to take a long time to respond and start to improve. Without further disturbance, shrub species would continue to become more decadent and increasingly uniform, while continuing to lose understory herbaceous species. Where a diversity of species still exist, results would be better than in areas that have already crossed a threshold, such as areas dominated by tarweed or places where the sagebrush is so thick that much of the herbaceous understory has been lost. These sites would require additional restoration above simply removing livestock to return to a more desirable condition. (See Dairy Ridge Sagebrush Treatment Project under Cumulative Effects). Reduction or removal of grazing may have little effect on range condition in the intermediate or even long term for many ecosystems in relatively stable, lower successional states (Laycock, 1991).

Alternative 2, *Proposed Action (Current Management)*
Under the proposed action, adaptive management would allow Forest Service personnel and permittees to respond quickly to changing conditions across allotments. Increased flexibility would allow new problems to be corrected the fastest. The Forest Plan utilization and stubble height standards would continue to provide for proper use and ensure plant reproduction and viability while protecting the stream channels and watershed from erosion. Upland and riparian communities that are in satisfactory condition would remain in satisfactory condition in much the same way as the “No Livestock Grazing” Alternative. Aspen areas in unsatisfactory condition would be managed at a lower utilization level until conditions improved. Holecheck recommends keeping utilization levels of primary forage grasses at 35% to prevent further degradation (Holecheck et al. 1998). Ground cover in the Aspen communities would improve faster than the species composition. Areas that have already crossed a threshold, such as areas dominated by tarweed or places where the sagebrush is so thick that much of the herbaceous understory has been lost, would require additional restoration to return to a more desirable condition (See Dairy Ridge Sagebrush Treatment Project under Cumulative Effects). Monitoring would continue across both allotments in the identified key areas. If additional unsatisfactory conditions or downward trends were found, an adaptive management strategy would be implemented to correct the problem. This would be on a case by case basis.

3.3.3 Cumulative Effects

The cumulative effects area for this analysis is the Monte Cristo township, encompassing the Woodruff and Dairy Ridge Cattle Allotments and the Blake Hollow, Dry Bread, Little Monte, and Bountiful sheep Allotments, as well as nearby surrounding private lands. Several other activities occur within this analysis area that have the potential to affect rangeland resources. These other activities include: recreation (ATV riding, hiking, fishing, and camping), livestock grazing in areas adjacent to these allotments, and vegetation management projects.

Recreation Use
Heavy recreation has the potential to affect rangeland vegetation in much the same way as heavy overgrazing from livestock. Heavy use causing soil compaction reduces desirable vegetative species and has the potential to increase annuals and other weedy species. People disperse noxious weed seeds throughout their travels. Vandalism of range structural improvements is expected to increase as recreational use increases.

Livestock Grazing
Livestock grazing occurs on two adjacent allotments as well as on private land surrounding the project area. Adjacent grazing can affect the rangeland resources in the project area by shifting use from wildlife to areas inside the project area. For example, if nearby private lands are heavily overgrazed, use by wildlife may shift to heavier use inside the project area allotments. Weeds may increase in overgrazed areas adjacent to the project area and can begin to invade across the allotment boundaries.

Vegetation Management
Several vegetation management projects are planned or have been implemented withinthe project area. Aspen treatment projects such as those included in the Monte Cristo Aspen Regeneration project will affect rangeland vegetation. Rest is required following implementation of any part of the project to ensure positive results. The Dairy Ridge Sagebrush Treatment Project is a recently proposed project that would occur on the Woodruff/Dairy Ridge allotments. The project is designed to use prescribed fire or mechanically treat sagebrush in the uplands. This would benefit the treatment area directly and the adjacent rangelands indirectly by shifting use by wildlife to the more productive newly treated areas.

3.4 Recreation

3.4.1 Affected Environment

The Wasatch-Cache National Forest is recognized as an urban forest, with nearly 1.7 million people living in close proximity to the forest. Recreation is currently the dominant use in the forest (WCNF Forest Plan FEIS, 3-226). The majority of the Ogden Ranger District is within one hour of the Wasatch Front urban center. The primary access route is State Highway 39 up Ogden Canyon and over Monte Cristo. Areas of the forest located along the Wasatch Front are heavily visited and most commonly visited for day-use or short trips. This includes the forest located within the Woodruff and Dairy Ridge Allotments area.

The Forest Service has used the recreation opportunity spectrum (ROS) since the 1980's as a management tool to describe and allocate outdoor recreation settings. ROS is a key component of management direction in the 2003 Revised Forest Plan. Opportunities, activities, and settings are part of the ROS system. The ROS establishes zones of uses (settings) where allowed activities provide opportunities for visitors to enjoy their public lands and attain desired beneficial experiences. As a tool ROS helps visitors decide which areas, or settings, are the best choice for their desired experience by letting them know what physical, social and

managerial settings are available. Providing the information helps visitors choose the best location for their desired activity so they have the best chance of having a quality, satisfying experience.

The Monte Cristo Township ROS mapping was based on Roaded Natural ROS along either side of State Highway 39 and the entire Dry Bread Concentrated Use dispersed camping area west of the highway; Semi-Primitive Motorized along either side of the Wasatch Ridge (20068), Lightning Ridge (20072), Big Spring (20206), Baldy-Wheeler (20071) roads; and, Semi-Primitive Non-Motorized in the remaining areas. This delineation applies to the Summer Recreation Opportunity Spectrum only.

No developed recreation sites are within the Woodruff and Dairy Ridge Cattle Allotment area. The nearest developed recreation site is the Monte Cristo Campground located on Highway 39, to the northwest of the analysis area. Undeveloped recreation occurs along most of the paved and natural surface roads in the Woodruff and Dairy Ridge Cattle Allotment Area. Motorized recreation, hunting, and dispersed camping are the primary activities in the Monte Cristo Area.

Motorized travel is the primary means of access and recreation in portions of the Woodruff and Dairy Ridge Allotments Area. Motorized recreation is limited to the Dairy Ridge (20067) and Baldy-Wheeler (20071) roads which are seasonally open. The 2007 Ogden Travel Management Plan also proposes one new motorized trail in this area. The Dairy Wash trail would be east of State Highway 39 connecting Wasatch Ridge Road (20068) to Dairy Ridge Road (20067). This trail is expected to be constructed within the next few years. Numerous unclassified routes are regularly used in the analysis area. ATV use specifically is encroaching upon decommissioned roads, non-motorized trails, and administrative roads.

Dispersed camping is a popular activity throughout the summer and fall seasons. Campsite use is heaviest during holiday weekends and during the hunting season. Nearly all of the inventoried undeveloped sites are used only during the big game hunting season. Approximately 20 inventoried dispersed sites are within the Woodruff and Dairy Ridge Cattle Allotments. Camping in the Woodruff and Dairy Ridge Cattle Allotments is dominated by camp trailers, motor homes and 5th-wheel campers. Tent camping is rarely seen.

Non-motorized recreation consists of trail hiking and exploring away from the roads. Hiking is limited to general walking through the forest in this area. The Woodruff and Dairy Ridge Cattle Allotment area has a few trails that receive very little visitor use. It is likely that these trails receive very little use because these trails are difficult to access. The trails in this area are all non-motorized trails that are maintained to a level 2 standard.

Hunting is the primary recreational activity on the majority of the Monte Cristo Area during the late summer and fall season. Hunting activity is generally accompanied by motorized recreation and dispersed camping activity. A variety of big game hunts occur beginning in the middle of August through the beginning of November. As a general hunt area, the Monte Cristo Area receives more hunters than average since all nearby hunting on private land is within a cooperative wildlife management unit (CWMU). Elk season is especially active in the Dairy

Ridge area. Often hunters are looking for the big bull elk that are raised on the adjacent private Deseret Land and Livestock properties that stray on to public land. Recreational shooting occurs in and around each dispersed campsite, especially during the hunting season when hunters often test and sight-in their guns.

3.4.2 Environmental Consequences

The key assumptions that are made in this effects analysis for recreation are:

(1) Livestock will be managed to stay within the allotment boundaries
(2) Overnight use (camping) is more impacted by grazing than day use
(3) Some individuals are negatively affected by seeing livestock grazing or their impacts, some are not, and some enjoy seeing cattle grazing

Often when visitor expectations are not met they have a less satisfying experience. Visitors' experiences are often influenced by the conditions of the setting they are in. Some individuals are negatively affected by seeing livestock grazing or their impacts, some are not, and some enjoy seeing livestock grazing. This section describes the direct, indirect, and cumulative effects to the recreation experience from the proposed action and alternative.

Alternative 1, *No Action (No Grazing)*
This alternative would eliminate livestock grazing on the Woodruff and Dairy Ridge Cattle Allotments. In general, this alternative would provide the greatest improvement to the recreation experience in the Woodruff and Dairy Ridge Cattle Allotments, for those who do not enjoy seeing livestock during their recreation outings. Under this alternative, there would be no grazing conflicts with recreation, or manure in campsites; grazing induced resource impacts would decrease over time, and there would be no cattle sharing campsites along the roads with visitors.

Alternative 2, *Proposed Action*
This alternative incorporates an adaptive management strategy that varies the grazing season, strategy, timing, intensity, frequency, amount of control, and other potential management activities based on resource conditions and to minimize resource impacts from livestock grazing.

In general, this alternative may improve the recreation experience in the allotments by reducing the resource impacts viewed by recreating visitors to the area. Having the grazing season end prior to the opening of the general hunts in the area (usually in early October) when camping in the Monte Cristo Township is greatest, would improve the hunting experience in this area. Vegetation improvements through deferred grazing would help to improve wildlife habitat conditions and may lead to improved quality of the hunt.

3.4.3 Cumulative Effects

The cumulative effects area for this analysis is the Monte Cristo township. The effects from past, on-going, and reasonably foreseeable activities listed in Table 3.1.1, as relates to the overall recreation experience, are minor. The effects of implementing either the Proposed Action or No

Action alternative are minor, as described in Section 3.4.2 above. Therefore, the effects of the Proposed Action or No Action alternatives in combination with the effects of past, on-going, and future actions will not have any discernable cumulative effect on the recreation experience in the analysis area.

3.5 Soil Quality and Condition

3.5.1 Affected Environment

The following section describes the existing conditions (affected environment) of the soil resources within the Woodruff and Dairy Ridge Cattle Allotments.

3.5.1.1 Existing Soil Quality

Previous range condition monitoring has shown generally that pastures are vegetated and soils are protected from wind or water erosion. However, scattered areas of low ground cover/bare soil and pedestaled plants have been noted throughout these allotments. From Range Condition Trend and Analysis work done in the 1960's, the historical distribution and trend of poor soil condition areas were noted for these allotments. Basic soil resource information for these range allotments can be found in the Soil Survey Report for Rich County (USDA NRCS. 1982).

Though indications of previous soil erosion are evident, overall the area appears to be stable. Soil conditions in the uplands vary greatly but are overall fair to good. Reconnaissance in the fall of 2001 revealed that many upland areas are minimally grazed. Though tarweed flats are present, most show an upward trend with some distribution of grasses and forbs within its community. The field review in 2008 indicates similar conditions as those seen in 2001.

Although a general stable trend in soil productivity and ground cover is occurring, some specific areas are in unsatisfactory condition and reflect slow recovery from historic overgrazing and current natural and human activities in the area. In particular, currently unsatisfactory conditions are resulting from the nearly season-long system of grazing. The current AMP calls for variability in the timing of grazing by use of a deferred pasture rotation; however this system has not been completely or effectively implemented. Without rest from grazing, bare soil conditions are occurring in aspen areas that exceed forest plan standards and guidelines. Because the 1960's range condition surveys indicated low ground cover and poor soil conditions in nearly 80% of the aspen cover types within the allotment, it is clear that these have been long standing problems. Bare soil areas occur frequently along the ridge tops and south-facing side slopes of the allotments, due to a combination of shallow soils, droughty conditions, invasions of weedy annuals such as tarweed, and gopher burrowing. Bare soil conditions from gopher activity are also present in some of the aspen stands within the allotment.

Dairy, Middle, and Eli Ridges - The ridgelines are natural transportation corridors for wildlife, domestic livestock, and forest recreation users. South and west facing aspects on these ridges have inherently poorer vegetation productivity, as do the peak and knob areas, due to shallow soils and droughty conditions. Nearly every ridgeline has a road or trail on it that is either currently open to use, or that has been closed or fallen into dis-use and is in the initial stages of

re-vegetation. Allotment folder notes indicate that the Wasatch Ridge in particular was used historically as a sheep driveway, although all of the ridges have certainly been used to some extent for this purpose. Concentrated grazing uses have been reduced substantially under current grazing management by the elimination of closed herding/trailing and common cattle/sheep use practices. Restoration treatments have occurred in many locations along the ridges, and have been met with some success where re-vegetation has been excluded from continued grazing use. However, the ridgelines are still being used for concentrated grazing practices such as salting, bedding, and shading. Small areas of low ground cover, barren of most vegetation except for annual weeds, were observed at scattered locations along the ridges. These scattered areas seem to persist, regardless of changes in grazing strategies and regimes, because soils and vegetation are being continuously impacted by a combination of pocket gopher colonies, big game and domestic grazing, and dispersed recreation uses such as camping and ATV/OHV use.

Sugar Pine Canyon, Lower Sylvia Hollow, Peggy Hollow, and Sleepy Hollow - All of these drainages are included within the Dairy Ridge and Woodruff Cattle Allotments; as such cattle are permitted to utilize feed in these areas to the extent that Revised Forest Plan (RFP) utilization guidelines and riparian objectives are being met.

Monitoring within lower Sylvia Hollow, near Williams Spring, indicates that the riparian bench is currently being impacted by cattle use. Key riparian species in this drainage were observed to have been over-utilized to less than one inch of stubble height.

2008 Soil Condition Evaluation Transects

Transects were located in areas rated with previously inventoried “poor soil condition” by the 1960’s Range Condition and Trend Survey for the allotments, or within vegetation communities likely to receive grazing use by sheep. Descriptions and maps of transect location, length, and vegetation type are contained in a separate report (Flood, P. 2008a). Vegetation and litter cover ranged from 43 to 92 %. Bare soil associated with gopher activity ranged from 0 to 35% of the transect sample points. Bare soil that could not be associated with any specific causative agent ranged from 0 to 33% of the transect sample points.

Under current management, many of the aspen cover type areas in both allotments are in unsatisfactory condition. It is important to note that in the 1960’s, range condition and trend data indicated that nearly 80% of all the aspen cover types in these two allotments had poor or very poor soil condition. Monitoring of these areas in 2003 indicated that conditions had not markedly improved. It is clear that low ground cover and desirable species diversity, as well as overall poor soil quality, are conditions that have existed on aspen stands within both allotments since these conditions were first monitored nearly 50 years ago.

3.5.1.3 Compliance of Existing Soil Conditions with Applicable Revised Forest Plan Standards and Guidelines for Watershed Health

This section analyzes the existing conditions within the two cattle allotments for compliance with soil quality related watershed health standards and guidelines in the Wasatch Cache National Forest Revised Forest Plan. These include:

Standard (S7) Allow management activities to result in no less than 85% of potential ground cover for each vegetation cover type. (See Appendix VII for potential ground cover values by cover type.) The RFP intended for this standard to be applied to only Rangeland Cover Types. Ground cover ranges at potential for the range vegetation types found in the allotment pastures are listed in Appendix VII of the Forest Plan (USDA Forest Service, 2003a) and in Tables 4 through 6 of the First Year Forest Plan Monitoring Report (USDA Forest Service, 2004a). Aspen cover types should have at least 77% effective ground cover, riparian cover types at least 85% effective ground cover, mountain brush cover types at least 78%, and sagebrush cover types at least 69% effective ground cover. Site specific monitoring of sagebrush stands within the allotments indicate that ground cover conditions range from 71 to 92 % and meet the standard set for these communities (tables 1 – 3). Within the aspen cover type, site specific monitoring indicates that current vegetation/litter/rock ground cover conditions range from 49% to 88%. Abundant gopher activity, considered to be an inherent property of this vegetation cover type (Goodrich, S. 2006-PG), was noted in several aspen sites that did not meet the ground cover standard. For those aspen sites where gopher activity was not specifically noted, bare soil conditions ranged from 12 to 35% of the monitoring site (tables 1-3). Overall, it appears that many of the aspen types within these allotments are **not** meeting the RFP ground cover standard at this time.

Guideline (G4) At the end of an activity, allow no more than 15% of an activity area (defined in Glossary) to have detrimental soil displacement, puddling, compaction and/or to be severely burned. The activity area for analysis of compliance with this guideline is specified here to be the individual pastures which make up each allotment. This guideline is intended to be applied to soil disturbances that result from management activities only. Soil displacement, puddling, compaction, or burning from inherent, natural processes is not considered to be detrimental for the purpose of applying this guideline.

Ground cover transects conducted within the pastures reveal that a causative agent in producing disturbed and barren soils is gopher burrowing and casting, an inherent, natural process that can occur anywhere there is a sufficient depth of insulating snow to produce a sub-nivean environment. Because it is a natural feature of these pastures, bare soil produced by this activity should not be considered a detrimental soil disturbance for the purpose of evaluating the effects of proposed management activities.

Bare soil due to grazing activity can result in detrimental soil displacement (erosion) or compaction. Using data from ground cover transects conducted in the pastures, bare soil due to other than gopher activity ranges from 12% to 35 %. Overall, it appears that many of the aspen types within these allotments are **not** meeting the RFP detrimental disturbance guideline at this time.

Guideline (G9) Avoid soil disturbing activities (those that remove surface organic matter exposing mineral soil) on steep, erosive, and unstable slopes, and in riparian, wetlands, floodplains, wet meadows, and alpine areas. Unlike other RFP direction, this guideline does not set a numerical threshold for management related soil effects; rather it focuses on avoidance of these effects on sensitive sites.

Unstable slopes are not a common feature in these allotments. Steep and erosive slopes, are found along the lower canyon side slopes in all of the pastures of these allotments. The gradient of some of these slopes exceeds 50%, and as such these areas are not considered to be part of the capable range acres for these allotments. In reality, very little livestock grazing occurs on these very steep landforms.

Guideline (G11) Use Best Management Practices and Soil and Water Conservation Practices during project level assessment and implementation to ensure maintenance of soil productivity, minimization of sediment discharge into streams, lakes and wetlands to protect of designated beneficial uses.
BMP's currently prescribed in AOP and being implemented:

- Salting and bedding areas located well away from water sources.

Although BMPS to reduce livestock concentration and associated soil disturbances, such as utilization guidelines and pasture rotation systems, have been prescribed in the Annual Operating Plans for these allotments, implementation of the BMP's has either not occurred or has been ineffective in meeting Forest Plan goals and objectives.

3.5.2 Environmental Consequences

Alternative 1, *No Action (No Grazing)*
Under this alternative, livestock would no longer be permitted to graze on the Woodruff and Dairy Ridge Allotments. If this alternative were selected, grazing would not be authorized after a two-year notification to the permittee from the date the decision is made. Non-permitted recreational horse use could still occur.

Following the two year notification period, cattle grazing would no longer occur on the allotments. Utilization of forage in unsatisfactory range condition areas, such as the aspen cover type, would be reduced to nothing. Complete rest from grazing would occur. It is expected that ground cover would quickly improve in these areas. Improvements to soil quality, such as re-accumulation of lost organic matter, would take considerably longer. Diversification of desirable grass and forb species under the aspen stands would proceed at approximately the same rate as the recovery of soil quality.

Removal of grazing from the other vegetation cover types in the allotments would have little noticeable effect on the soil resource. Due to lack of forage and water, little grazing use occurs along the more barren open ridge tall forb areas, and there are little or no current grazing impacts on soil quality within the sagebrush grass cover types.

The effects of no action alternative on soil conditions within riparian areas and along streams are covered within the watershed effects section of this analysis.

Alternative 2, *Proposed Action*
This alternative would continue the current level of permitted grazing and the current management of the allotments, although adaptive management practices will be implemented to bring about needed improvement, particularly in riparian areas and aspen areas in unsatisfactory condition. This alternative includes construction of a drift fence in Silvia Hollow and new water improvements. It implements the 35% utilization level in unsatisfactory aspen areas. Additional adaptive strategies will be implemented as needed if conditions do not trend toward or meet forest plan desired conditions.

Under current management, many of the aspen cover type areas in both allotments are in unsatisfactory condition. It is important to note that in the 1960's, range condition and trend data indicated that nearly 80% of all the aspen cover types in these two allotments had poor or very poor soil condition. Monitoring of these areas in 2003 indicated that conditions had not markedly improved. It is clear that low ground cover and desirable species diversity, as well as overall poor soil quality, are conditions that have existed on aspen stands within both allotments since these conditions were first monitored nearly 50 years ago. As part of this alternative, lower utilization standards for the unsatisfactory condition areas will be implemented and a deferred pasture grazing system will be applied. These changes in current grazing management should allow for periodic rest of the areas currently in unsatisfactory condition. As a result of these changes, it is assumed that an upward trend in ground cover, species diversity, and general soil quality will occur, and that the aspen cover types will eventually return to satisfactory condition under this alternative. Ground cover conditions should see an immediate improvement; however improvements in species composition and diversity will occur gradually and at a similar rate to soil quality restoration through re- accumulation of organic matter.

Also under the proposed action, sagebrush cover types will have sufficient ground cover to prevent detrimental soil erosion from occurring. Because of the very rocky nature of soil types found within the two allotments, the proposed action will not result in detrimental soil compaction.

The effects of proposed action on soil conditions within riparian areas and along streams are covered within the watershed effects section of this analysis.

3.5.3 Cumulative Effects

The scope of the cumulative analysis identifies significant issues, the geographic area, time frame for analysis, and other actions affecting the resources of concern. The significant cumulative effects issue related to soil resources is that certain past, present, and reasonably foreseeable future management activities have the potential to create disturbances to soils. These disturbances could consist of detrimental amounts of erosion or compaction. The indicator for cumulative effects is the kind and amount of detrimental disturbance observed, predicted, or anticipated from the various types of management activities that have the potential to create disturbances to soils. The geographic area for the analysis of cumulative effects to soils will be the individual activity areas represented by the grazing allotment pastures. The time frame for the analysis of reasonably foreseeable actions is about 10 years, which represents the

approximate length of time the proposed action authorizes grazing for. The time frame for the analysis of past actions is about 100 years.

Cumulative Effects Affected Environment - Other actions that may have an influence on soil resources within the cumulative effects analysis area are historic levels of past grazing, recreation uses, and vegetation treatments. Historically, sheep and cattle grazing have occurred in the allotments at levels much greater than what is currently being proposed. Recreational activities of various kinds span the allotments, and recreational use is increasing as the resident and visitor populations grow. The assessment of cumulative effects on recreational resources notes that this high level of recreational use is generating notable impacts on natural resources as well as on recreation itself. Fire and mechanical vegetation treatments are currently proposed for the period 2010-2015 on approximately 500 acres of sagebrush stands within the two allotments.

Determination of Cumulative Effects - Several effects may occur from other activities occurring within the cumulative effects area. Generally, past levels of historic over-grazing may have caused erosion and sedimentation by shearing soil and leaving bare surface soil that can erode during storm events. Recreation uses create impacts on soil quality associated with the establishment of dispersed camp sites and user-developed ghost roads accessing these sites, legal and illegal ATV use, and general foot, horse, and vehicle traffic. Motorized roads and trails have the potential to erode during storm events that may cause sedimentation of streams if they are close by. Dispersed recreation may cause detrimental amounts of soil disturbance and trampling that could lead to accelerated soil erosion. Recreation uses intersect and contribute cumulatively where similar impacts are occurring due to grazing.

Cumulative Effects of the No Action Alternative
Under this alternative, livestock will no longer be permitted to graze on the Woodruff and Dairy Ridge Allotments. This alternative will have no impact on the current or future levels of recreational use, or on proposed vegetation treatment activities in the allotments.

Sheep and cattle grazing resulted in high impacts to soil resources from the late 1800s until the 1930s when active grazing management took effect in the area. Since then, a gradual improvement in land conditions has occurred as indicated by increased ground cover and absence of active soil erosion in most areas within grazing allotments. Improving ground cover and soil quality conditions resulting from implementation of the no action alternative will result in cumulative positive effects to soil quality within the aspen cover types of the allotment pastures. The proposed action will have little or no cumulative effects on the gradual improvement of soil quality that has been occurring as a result of past livestock number reductions within the open ridgeline tall forb areas and sagebrush grass cover types of the allotment pastures.

Recreation uses are concentrated within the aspen cover types and tall forb open ridge lines of the allotment pastures. The principal effects to soil quality from these features and activities are detrimental amounts of soil compaction and soil erosion. It is anticipated that these effects will increase over time as forest recreation increases in the cumulative effects analysis area. Within the aspen cover types, improving ground cover and soil quality conditions resulting from implementation of the No Action alternative should partially offset these effects. Although not

part of the Proposed Action, closure of non-system roads and trails within the allotments through implementation of the Ogden Ranger District Travel Plan will further reduce the effects. The ranger district has been actively enforcing the revised Ogden Travel Plan, closing user created roads/trails and managing recreational use within the cumulative effects analysis area. Recent examples include closing the Eli Ridge Road and the trail along Silvia Hollow. The no action alternative will have little or no cumulative effects on the detrimental soil compaction and erosion that occurs now or in the future as a result of motorized road/trail usage and dispersed recreation activities within the open ridgeline tall forb areas and sagebrush grass cover types of the allotment pastures.

Fire and mechanical vegetation treatments have been proposed to occur within sagebrush grass cover types within some of the allotment pastures. Although small amounts of bare soil will result within the treatment areas as a result of these activities, increases in soil erosion will be short term in nature and will not result in a long term detrimental soil disturbance. Implementation of the no action alternative will result in a dependable period of rest for treated areas, and perhaps result in better post treatment recovery of vegetation. This could partially offset the short term effects to soil quality that could result from the proposed vegetation treatments within the allotment pastures.

Cumulative Effects of the Proposed Action

Current grazing activities are having an effect upon the soil resources, primarily within the aspen cover types within the allotment pastures. However, with the implementation of changes to current grazing management, the proposed action will result in improvements to soil ground cover and overall soil quality in these areas. Although similar conditions are present in open ridgeline tall forb areas in most of the allotment pastures, these are due primarily to non-grazing activities and inherent site properties.

Sheep and cattle grazing resulted in high impacts to soil resources from the late 1800s until the 1930s when active grazing management took effect in the area. Since then, a gradual improvement in land conditions has occurred as indicated by increased ground cover and absence of active soil erosion in most areas within grazing allotments. Improving ground cover and soil quality conditions resulting from implementation of the proposed action would result in cumulative positive effects to soil quality within the aspen cover types of the allotment pastures. The proposed action will have little of no cumulative effects on the gradual improvement of soil quality that has been occurring as a result of past livestock number reductions within the open ridgeline tall forb areas and sagebrush grass cover types of the allotment pastures.

Recreation uses are concentrated within the aspen cover types and tall forb open ridge lines of the allotment pastures. The principal effects to soil quality from these features and activities are detrimental amounts of soil compaction and soil erosion. It is anticipated that these effects will increase over time as forest recreation increases in the cumulative effects analysis area. Within the aspen cover types, improving ground cover and soil quality conditions resulting from implementation of the proposed action should partially offset these effects. Although not part of the proposed action, closure of non-system roads and trails within the allotments through implementation of the Ogden Ranger District Travel Plan would further reduce the effects. The ranger district has been actively enforcing the revised Ogden Travel Plan, closing user created

roads/trails and managing recreational use within the cumulative effects analysis area. Recent examples include closing the Eli Ridge Road and the trail along Silvia Hollow. The proposed action will have little of no cumulative effects on the detrimental soil compaction and erosion that occurs now or in the future as a result of motorized road/trail usage and dispersed recreation activities within the open ridgeline tall forb areas of the allotment pastures.

Fire and mechanical vegetation treatments have been proposed in to occur within sagebrush grass cover types within some of the allotment pastures. Although small amounts of bare soil would result within the treatment areas as a result of these activities, increases in soil erosion would be short term in nature and would not result in a long term detrimental soil disturbance. The proposed action would result in little of no cumulative effects on the short term effects to soil quality that could result from the proposed vegetation treatments within the allotment pastures.

Irretrievable or Irreversible Commitment of Resources – No irretrievable or irreversible commitment of resources are expected to occur to soil quality from the proposed action of this project because long term impacts to soil resources are expected to occur. No permanent roads will be constructed as part of this project, and all other potential detrimental impacts from soil erosion and compaction can be minimized through the implementation of mitigation measures recommended in this analysis.

3.6 Water Quality

3.6.1 Affected Environment

The allotments are located in the headwaters of the Woodruff watershed (Hydrologic Unit Code 1601010107). The headwaters of the Woodruff watershed drains into Woodruff Reservoir and is diverted into several irrigation canals and eventually flows into the Bear River near Woodruff, Utah. The nearest US Geological Survey stream flow gage from the allotments is Woodruff Ck BL Reservoir (USGS #10020900) and is 7.0 miles from the allotments.

3.6.1.1 Water Quality

For the waters draining these watersheds, the State of Utah has determined that all assessed classes are meeting their beneficial uses (Utah, State of. 2006b). During the field trips, the water in the streams was clear.

The State of Utah has designated the streams draining the watersheds above the National Forest boundary as Antidegradation Segments. This indicates that the existing water quality is better than the established standards for the designated beneficial uses. Water quality is required by state regulation to be maintained at this level. The beneficial uses of streams within these watersheds, as designated by the Utah Department of Environmental Quality, Division of Water Quality, are:

- Class 2B – protected for recreation
- Class 3A – protected for cold water species of game fish and other cold water aquatic species
- Class 4 – protected for agricultural uses

The numeric water quality standards can be found in Section R317-2, Utah Administrative Code, *Standards of Quality of Waters of the State* (Utah, State of. 2006a).
The State of Utah collects water samples throughout the State of Utah on a regular cycle and has analyzed them for chemical, nutrient, and metals.

A bacteria sample was collected on Wheeler Creek above the exclosure in July 2009 using current Utah Division of Water Quality protocol. From the sample collected on Wheeler Creek, the most probable number of total coliform is 721.5 counts per 100 ml. and the most probable number of E.Coli. is 344.1 counts per 100 ml. For domestic and secondary contact recreation, the E. Coli. state numeric criteria for maximum counts is 940 counts per 100 ml. This indicates that much of the bacteria is from warm blooded animals and that the sample meets State standards for maximum counts.

3.6.1.2 Precipitation Patterns
In Utah most precipitation occurs from winter snowfall and summer thunderstorm activities. Thunderstorms generally occur as a cloudburst that may drop heavy precipitation along a narrow path (Ashcroft et al. 1992). At Hardware Ranch, average annual precipitation is 17.4 inches, record monthly precipitation ranges from 6.4 in February to 2.9 inches in July. Precipitation in northern Utah occurs as snow in the winter and occasional summer thunderstorms.

3.6.1.3 Drainage Patterns and Water Features
The only perennial streams in the allotments are in Sugar Pine Canyon, Silvia Hollow, and Wheeler Creek. There are no stream gages in the allotments and water discharge is not known. Stream channel widths are about 4 to 6 feet wide in the perennial part of the streams and water depth during the spring-season high flows is probably up to one foot high based on the height of the channel banks. From summer to early spring, low amount of water flows in the perennial streams and the source of the perennial water is from springs. As an example, the amount of water flowing in the stream channel below Ranger Spring in mid-July 2009 was about 12 gallons per minute but during spring runoff it is estimated that flow was about 1 cubic feet per second (448 gallons per minute).

3.6.1.4 Stream Channel and Riparian Conditions
Sugar Pine Creek is fed by a meadow with small springs collecting water in an incised channel upstream of the fenced area. A portion of Peggy Hollow has perennial stream flow beginning at a spring with a beaver dam. Most of Wheeler Creek is an intermittent drainage with surface and subsurface flow. The subsurface flow occurs in wide reaches with little to no entrenchment. The surface flow occurs in narrow sections with medium to substantial entrenchment. Several ephemeral tributaries develop surface flow that is associated with spring flow. Some include beaver dams and developed livestock ponds.

During a review in the late 1990s, most of the stream channels in Dip Hollow were well vegetated and had very few eroded areas. There was no water in the channel at that time. One area in the drainage about 3,375 feet from the confluence with Sugar Pine had a high rate of erosion that cut through fine sediments for about 100 yards. The area appears to be susceptible to

erosion due to abandonment of the area by beavers, and head cutting back through the old dam structures and drained pond areas.

In Sugar Pine, Peggy Hollow, and Wheeler Creek, buck and pole fence exclosures have been constructed on USFS land in a large portion of the area of perennial water that flows in these drainages. Although the Wheeler Creek exclosure ends about 0.4 miles from the Forest boundary, it protects the riparian area to the Forest boundary by creating a barrier that stops cattle from accessing the riparian area even though it is not fenced. The exclosures have eliminated most of the head cut erosion in these drainages and have allowed the stream within the exclosures to move toward more proper functioning riparian area. For example, in the Sugar Pine exclosure, sediments now deposit in the ungrazed sedges along the banks and have resulted in the buildup of stream bars and banks. The stream in this area has become narrow and deeper which improves fisheries habitat by giving better protection to the fish and cooler water temperatures.

However, Sugar Pine Canyon still contains some areas with poor riparian conditions consisting mainly of compacted soils and unstable stream banks. Where no fences have been erected, some main livestock trails occur along the stream banks and in dry stream channels. The dry stream channel above the exclosure at the base of Cave Ridge is a passageway for livestock coming from the Monte Cristo Campground area. The stream channel contains many old, inactive beaver complexes, with present vegetation consisting mainly of upland species. During a field review in the late 1990s, the rate of bank erosion appeared to be high with vegetation nearly absent in some areas.

In many ways similar to Sugar Pine drainage, Wheeler Creek contains a mixture of riparian areas, some that are properly functioning and some that are in poor condition. East of Road 20071, Wheeler Creek is perennial and there is a buck and pole fence surrounding the riparian area for about 0.3 miles to the east. Within the exclosure and to the Forest boundary the riparian area has large willows, the stream banks are well vegetated with deep-rooted vegetation, and several beaver dams occur, some of which are currently active. In Silvia Hollow in July 2009, the stream was dry for 900 feet west of the Road 20071. From 900 feet west of the Road 20071 to Williams Spring the stream is flowing and many willows are growing in the 50 foot wide riparian area near the stream. There is some stream bank sloughing from livestock; approximately 13% of the stream banks were altered by livestock trampling based on measurements along the stream banks in mid-July 2009 (see water technical report available in the project file).

Wheeler Creek stream from the exclosure east of Road 20071 to Ranger Hollow is ephemeral or intermittent. A buck and pole fence excludes livestock from around Ranger Spring. About 1000 feet south of Ranger Spring, a wire fence excludes livestock from 0.2 miles of stream channel between Three Spring and Balsam Spring. In mid-July 2009, water was flowing from Ranger Spring to 850 feet south of the spring. This area is not fenced and livestock have trampled the stream banks and use the stream as a trail between the exclosures. In mid-July 2009, stream banks had between 50 and 85% stream bank alteration from cow hoof prints. No defined channel occurs in the drainage above Ranger Spring. The stream channel above Balsam Spring is ephemeral and was dry in mid-July 2009 (see water technical report available in the project file).

Most of the unfenced springs have livestock trampling in the spring area and utilization of the vegetation surrounding the springs has been high to the point where bare soil is present. Examples of these areas are uplands near Dairy Reservoir, the area surrounding Peggy Hollow Bench Pond, and the area surrounding Swan Spring.

3.6.1.5 Wetlands

Wetlands occur in these allotments and are estimated to be about 50.3 acres. Most of the wetlands are willow types that grow along the perennial stream channels in Sugar Pine Canyon, Silvia Hollow, and Wheeler Creek. The willow type wetlands appear to be in good condition as indicated by dense, contiguous stands of willows. The sedge vegetation type is also found in small seeps in drainage bottoms and near ephemeral stream channels. This type exhibits some trampling by livestock. Almost all of the wetlands associated with ponds, with the exception of ponds with beavers, were constructed for livestock use. These ponds are very small, about twenty feet in diameter, and have bare edges where livestock drink water. Many go dry before the end of the summer, depending upon the amount of precipitation during the year. These ponds were originally constructed in or below small seeps and spring areas. There are some beaver dams associated with the wetlands in Sugar Pine Canyon, Silvia Hollow, and Wheeler Creek. There are about 9.8 acres of wetlands that are located within the fenced exclosure areas. In these areas the wetlands are in good condition and have very little livestock trampling. About 40.5 acres of wetlands are outside of the fenced exclosures and have livestock trampling and trailing.

Table 3.4. Wetland type and estimated amounts in the Woodruff and Dairy Ridge Allotments

	Amount of Wetland (acres)		
Allotment	**Sedge**	**Willow**	**Pond**
Woodruff	5.0	12.1	2.2
Dairy Ridge	2.1	28.1	0.8
Total	7.1	40.2	3.0
Percent of Total	14	80	6

3.6.1.6 Floodplains

Floodplains are defined by Executive order 11988 as “lowland and relatively flat areas adjoining inland and coastal waters”. Floodplains have also been defined in various ways but for this analysis, these areas are defined as flat areas adjacent to streams that are composed of unconsolidated depositional material derived from sediments transported by the related stream, based on definitions contained in (Fairbridge 1968). The streams in these allotments are very small and the floodplains are mainly located on the narrow flat area next to the willow dominated perennial stream channels. These areas are located in the perennial reaches of Sugar Pine Canyon, Silvia Hollow, and Wheeler Creek. These areas do not have structures that restrict the ability of water to flood. There are no indications that livestock grazing is affecting the function of the floodplains.

3.6.1.7 Municipal Watersheds

Waters in the Woodruff and Dairy Ridge allotments are not within a municipal watershed.

3.6.2 Environmental Consequences

This section describes the general effects of grazing and how current grazing practices in the allotments are affecting water resources; how the allotment management is meeting Forest Plan direction; and recommendations.

The following is taken from the Wasatch-Cache National Forest Plan FEIS (USDA Forest Service. 2003b) and is a description of general effects that can occur to soil and water resources from grazing. "Livestock grazing directly impacts soil infiltration by trampling, soil compaction and loss of vegetative cover on both upland and riparian sites. Fecal wastes can increase bacterial concentrations in water through livestock defecation in a stream or riparian area. Water quality can be indirectly affected by the resulting increased soil runoff and erosion, and sediment delivery to adjacent riparian areas and streams (Holechek et al. 2001). Impacts are often greater in riparian zones because they are preferred because of the availability of shade, water and more succulent vegetation (Platts 1991). Over longer time periods, grazing can result in increased fine sediment loads from stream bank erosion, loss of riparian habitats by stream channel widening or degradation and lowering of water tables through channel degradation."

Alternative 1, *No Action (No Grazing)*
Under the *No Action* alternative, there will be no permitted livestock grazing on either of these two cattle allotments after the completion of a three year phase out period.

Stream Channel Morphology – With the removal of livestock grazing, it is expected that improvements in stream channel shape would occur within a couple years along 3.9 miles of perennial stream channel in those areas that are not currently fenced in exclosures. The stream segments that would have the greatest improvement would be 2.6 miles in Silvia Hollow west of Wheeler Creek exclosure, Sugar Pine west of the exclosure, and Peggy Hollow outside of the exclosure. Stream channels are expected to become much narrower and densely vegetated as a result of no removal of vegetation by cattle and the capture of sediment in the denser vegetation.

Water Quality – It is expected that there would be improvement in water quality from no grazing in 3.9 miles of perennial stream channels that are outside of fenced exclosures because cattle would not be trailing and defecating in the riparian areas. Water quality in the exclosure areas is expected to remain the same since livestock grazing does not cause stream banks trampling or sedimentation of the water. Bacteria levels in the stream water may improve because cattle defecation would no longer occur in the perennial streams outside of the fence exclosure. It could be that there will be little change in bacteria levels since beaver are still present. Stream water temperature in the exclosures is expected to remain the same as current conditions since they have dense vegetation in the riparian area that is providing shade.

Wetlands – Wetlands outside of fenced exclosures that are located along perennial streams, seeps, and springs are expected to improve from the removal of trampling by cattle. The improvement would be denser vegetation, lack of soil pedestaling, and better wildlife habitat on about 40.5 acres of wetlands.

Floodplains – Streams within the allotment that have floodplain areas are located within existing fenced exclosures. Since livestock grazing currently does not affect the stream shape on floodplain areas and does not affect the ability of streams to flood onto the flood-prone areas adjacent to streams, the removal of livestock grazing from the allotment is expected to have no affect on the floodplain areas.

Municipal Watersheds –There would be no effects to municipal watersheds because the allotment is not located in a municipal watershed.

Alternative 2, *Proposed Action*
The proposed action would authorize the continuation of grazing on the Woodruff and Dairy Ridge Allotments under current standards and guidelines utilizing an adaptive management strategy. In general, the effects to water resources from the proposed action would be the continuance of grazing management that results in some impacts to specific areas where stream banks and wetlands are affected by cattle. It is expected that very little impact from livestock grazing will occur to water quality and floodplains. No municipal watersheds will be impacted by livestock grazing. The effects to specific water resource areas are described below.

Stream Channel Morphology – The perennial sections of stream channels are important because they have the ability to produce dense streamside vegetation that results in lower stream temperatures that are beneficial to aquatic species. Because of the importance of the perennial stream segments, three fence exclosures have been constructed in Wheeler Creek, Sugar Pine Canyon, and between Three Spring and Balsam Springs. There is 4.5 miles of perennial stream within the allotment. Currently, fence exclosures protect 0.8 miles of perennial stream channel on the allotment. As part of the proposed action, a drift fence is proposed to be installed near Silvia Hollow. This fence is expected to reduce stream bank trampling by cattle along 2.0 miles of stream (44% of perennial stream length in the allotment) and should reduce sedimentation and animal wastes in Wheeler Creek. In total, 3.2 miles or 87% of the length of perennial stream channel in the allotment will be either protected through exclosures or through fencing that reduces the use of the riparian areas by cattle. Sugar Pine west of the exclosure and Peggy Hollow outside of the exclosure will continue to be trampled by cattle for 0.6 miles or 13% of the length of perennial stream channel in the allotment.

Poor stream conditions are expected to continue along the Ranger Hollow stream channel for 850 feet between the Ranger Spring exclosure and the Three Spring and Balsam Spring exclosure. This area will continue to be used for livestock watering and trailing but will be monitored to determine if deferred rotation will improve conditions. Monitoring will be conducted in Ranger Hollow to determine if improvements in stream channel conditions are occurring and if no improvement is found, changes in grazing management may be taken to improve the poor streamside conditions. See Section 2.4 for examples of grazing management that may occur to improve riparian conditions.

Water Quality – In general, livestock grazing can adversely affect water quality by removing vegetation and soil trampling which may result in accelerated erosion and sedimentation of streams, from increased nutrients resulting from increased sedimentation and animal wastes,

increasing stream water temperatures as a result of removal of overhanging stream side vegetation, and increasing bacteria in streams from animal wastes.

As explained in the section above, the proposed action will provide increased protection of riparian areas that will result in a total of about 87% of the perennial stream channel length having protection through exclosures or fencing that reduces cattle use in riparian areas. For most of the year, water in the perennial streams is clear because the source of the water is from springs, the amount of spring flow is low, storms are very infrequent, and spring runoff is mainly from snowmelt and occurs over about a four week period. It is expected that water quality will continue to be good since most of the perennial streams will have protection from livestock grazing and most of the perennial stream channel conditions are good. Also, beaver ponds that are located along Wheeler Creek and Sugar Pine Canyons capture most sediment that may come from the watershed above them.

A bacteria sample collected in Wheeler Creek above the exclosure meets Utah standards for maximum E.Coli. counts per 100 ml. It is expected that bacteria concentrations in the streams draining the allotments are affected more by the beaver activity than by the cattle grazing because beaver live directly in the stream water and most of the perennial stream channels in the allotments are protected from livestock grazing by exclosure fences. A drift fence planned to be installed to keep cattle from grazing the Silvia Hollow riparian area is expected to reduce the amount of bacteria in Wheeler Creek.

Stream temperatures in the perennial sections of the streams are expected to improve through the installation of the drift fence planned to be installed to keep cattle from grazing the Silvia Hollow riparian area. Increased vegetation and reduced bank trampling should lower stream temperatures in Silvia Hollow. Most of the other perennial stream channels are within fence exclosures where stream side vegetation is dense and shades the stream.

Wetlands – In general, wetlands may be impacted by livestock grazing by trampling of wet soils and removal of vegetation to the extant that bare soils and erosion occur. Currently, many of the streamside wetlands associated with the perennial stream channels are protected from livestock grazing through fenced exclosures. As part of the proposed action, a drift fence that is planned to be installed in the Silvia Hollow riparian area to keep cattle from grazing there is expected to improve the wetlands along 2.0 miles of perennial stream channel. The wetland riparian area is about 50 feet wide and the drift fence should reduce livestock trampling of about 4.1 acres of wetland.

The conditions of wetlands that occur at seeps and springs are expected to remain as they are currently. Most seeps and springs have ponds that are constructed in or below them to provide an area where livestock can water. Most of the ponds will continue to have bare ground around them due to livestock trampling. Wetlands associated with springs and seeps that have no fencing around them are expected to have some livestock trampling because they are close to the ponds where the livestock water. Part of the proposal is to monitor several spring areas to determine if the wetland areas are grazed properly. If they are found to be overgrazed, changes in grazing management may be taken which are expected to improve the conditions of the wetland.

Floodplains – Streams within the allotments that have floodplain areas are located within existing fenced exclosures. Since livestock grazing currently does not affect the stream shape on floodplain areas and does not affect the ability of streams to flood onto the flood-prone areas adjacent to streams, the removal of livestock grazing from the allotment is expected to have no affect on the floodplain areas.

Municipal Watersheds – There would be no effects to municipal watersheds because the allotment is not located in a municipal watershed.

3.6.3 Cumulative Effects

The cumulative effects area for this analysis is the 6th code hydrologic units, Upper Woodruff Creek (HUC# 160101010701) and Sugar Pine Canyon (HUC# 160101010701). This area includes the Woodruff and Dairy Ridge Cattle Allotments and the Bountiful Sheep Allotment. The 2008 allotment review indicates that current grazing of the Bountiful Sheep Allotment has had little effect on erosion and sedimentation, water quality, and wetlands. Several other activities occur in these drainages that have the potential to affect erosion and resultant sedimentation of the streams, water quality, and wetlands. These other activities are recreation use such as hiking, camping, ATV use, horseback riding, and prescribed fire activities. These activities are limited to specific areas and little erosion has been seen from these activities. Cumulatively, there appears to be little additional erosion and sedimentation resulting from non-grazing activities. Most of the poor soil conditions have been caused by historic overgrazing (or are in specific areas where overgrazing is occurring now, as described above). As disclosed above, implementation of either the Proposed Action or the No Action alternative in addition to past, on-going, and future actions, would maintain the quality of the water resources in this area.

Irretrievable and Irreversible Commitment of Water Resources – No irretrievable and irreversible commitment of water resources is expected because water is meeting State water quality standards and the effects of grazing practices can be adapted to adjust for impacts to water resources.

3.7 Wildlife

3.7.1 Affected Environment

The potential effect of cattle grazing on wildlife was identified by the interdisciplinary team as an issue (see EA, Section 1.8.). The issue as identified included the potential for grazing to decrease cover and forage used by a variety of wildlife species. Potentially affected species include USFWS-listed Threatened, Endangered, Proposed and Candidate species; Forest Service Sensitive species; Wasatch-Cache National Forest Management Indicator Species (MIS), migratory birds, and general species of local concern

3.7.1.1 Threatened, Endangered, Proposed, and Candidate Species

According to the U.S. Fish and Wildlife Service (Utah Field Office) March 2009 *List of Endangered, Threatened, Proposed, and Candidate Species for Utah Counties* (available in the project record), there are two Threatened (T), and one Candidate (C) species as occurring, or potentially occurring, in Cache and Rich County. These include the Canada lynx (T), black-footed ferret (T-Rich County Only), and the yellow-billed cuckoo (C-Cache County only).

Canada lynx. Habitat for Canada lynx occurs within the Ogden Ranger District, primarily in the conifer cover types dominated by various combinations of lodgepole pine, Douglas-fir, subalpine fir, and Engelmann spruce interspersed with the aspen cover type. The Ogden Ranger District lies within a "travel corridor" between two larger habitat areas (in Idaho and within the Uinta Mountains of Utah) and is not considered permanent resident habitat. In a letter from the USFWS dated November 6, 2002, lynx habitat within the Ogden Ranger District was reclassified from Lynx Analysis Unit (LAU) to linkage area due to a low percentage of primary habitat. No critical habitat was identified within the state of Utah for the species (USDI Fish and Wildlife Service (2009a).

Black-footed ferrets. Black-footed ferrets are a prairie species almost entirely obligate on prairie dog towns for food and shelter. Portions of Rich County are considered to be historic range for black-footed ferrets. The Wasatch Cache National Forest is probably on the very western edge of that range, if included at all. None are known or expected to occur within the USFS portion of the allotments.

Yellow-billed cuckoos. The current distribution of yellow-billed cuckoos (*Coccyzus americanus*) in Utah is poorly understood, though they appear to be an extremely rare breeder in lowland riparian habitats statewide. Nesting habitat is classified as dense lowland riparian characterized by a dense sub-canopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs) within 100 m (333 ft) of water. Overstory in these habitats may be large, gallery-forming trees, 33 to 90 feet in height or developing trees 10 to 27 feet in height, usually cottonwoods. Nesting habitats are found at elevations below 6,000 ft. Cuckoos may require large tracts of contiguous riparian nesting habitat between 100 and 200 acres. Yellow-billed cuckoo habitat does not occur within the project area.

3.7.1.2 Forest Service Intermountain Region Sensitive Species

Of those species listed as sensitive for the Wasatch-Cache Planning Area (USDA Forest Service 2009), the following occur or are likely to occur within the project area: northern goshawk, flammulated owl, three-toed woodpecker, and the western big-eared bat (Table 3.5). The Northern American wolverine, greater sage grouse, boreal owl, and great gray owl may possibly occur within the project area. The sharp-tailed grouse, bighorn sheep, spotted bat, bald eagle, and peregrine falcon have not been found in the area and are not believed to occur within the project area. They will not be discussed further.

Detailed habitat requirements and general distribution information for all sensitive species on the Wasatch-Cache National Forest are discussed in the Revised Forest Plan (USDA Forest Service 2003).

Some of the sensitive species are also management indicator species (MIS). Some MIS and their habitat are found in the allotments. Please see the MIS section for detailed discussions about those species.

Table 3.5 Intermountain Region, Forest Service Sensitive species found in the project area on the Uinta-Wasatch-Cache National Forest, Utah.

Species	Evaluation for Analysis
Northern goshawk *Accipiter gentilis*	Species is also MIS. See MIS section for evaluation.
Flammulated owl *Otus flammeolus*	Flammulated owls are present on the Wasatch-Cache National Forest and appear to be fairly well distributed. On the Ogden Ranger District, flammulated owl habitat primarily consists of mature stands of aspen, aspen/conifer, and conifer/aspen. A total of 3,711 acres of aspen and aspen/conifer occur within the Woodruff and Dairy Ridge Cattle allotments (50 percent of the project area).
Three-toed woodpecker *Picoides tridactylus*	Their distribution generally coincides with the range of spruce habitat, however they can be found in sub-alpine fir, Douglas-fir, grand fir, ponderosa pine, aspen, and lodgepole pine forests. The three-toed woodpecker is dependant on recent burns and bark beetle infestations for food resources. Coniferous forests generally above 8000ft (2400m) in elevation are typical of wintering and nesting habitat. In Utah, three-toed woodpeckers also use aspen for nesting where intermixed or adjacent to coniferous forests (Hill et al. 2001).
Western big-eared bat *Corynorhinus townsendii*	Widely distributed throughout the Intermountain Region. The species occurs in large numbers at Bat Cave on the Ogden District and in Logan Cave on the Logan District. Bat Cave is located outside of and to the south of the project area. Western's may exist in other areas of the Forest where there is suitable cave or cliff roosting habitat.
North American Wolverine *Gulo gulo*	Recent data searches (USDA Forest Service 1994a) indicate that no wolverines were sighted in Utah between 1961 and 1983, but there were sightings between 1983 and 1993, on the Ashley and Wasatch-Cache National Forests. A 1995 survey conducted in Franklin Basin did not produce any tracks or photographic evidence of wolverines (Bissonette et al. 1995). On March 29, 2002 a helicopter survey for wolverine conducted by the Caribou National Forest identified probable wolverine tracks just south of the Idaho/Utah state line (USDA Forest Service 2002a). On March 17, 2004 a vehicle hit and killed a wolverine on U.S. Highway 30 near Fossil Butte National Monument west of Kemmerer. There have been

	unconfirmed sightings elsewhere on the Uinta-Wasatch-Cache National Forest.
Greater sage grouse (*Centrocercus urophasianus)*	Sagebrush dominated habitat with an understory of native grasses and forbs.
Boreal owl ***Aegolius funereus***	Boreal owls have responded to taped calls in northern Utah in 2-3 locations on the Ashley, Uinta, and Wasatch-Cache National Forests. Nest locations have not been found on the Wasatch-Cache National Forest. In 2001, on the Uinta National Forest, a nesting boreal owl was located. This was the first documented nesting of a boreal owl in Utah (Mika 2000 pers. comm.).
Wolverine *Gulo gulo*	Recent data searches (USDA Forest Service 1994a) indicate that no wolverines were sighted in Utah between 1961 and 1983, but there were sightings between 1983 and 1993, on the Ashley and Wasatch-Cache National Forests. A 1995 survey conducted in Franklin Basin did not produce any tracks or photographic evidence of wolverines (Bissonette et al. 1995). On March 29, 2002 a helicopter survey for wolverine conducted by the Caribou National Forest identified probable wolverine tracks just south of the Idaho/Utah state line (USDA Forest Service 2002a). On March 17, 2004 a vehicle hit and killed a wolverine on U.S. Highway 30 near Fossil Butte National Monument west of Kemmerer. There have been unconfirmed sightings elsewhere on the Wasatch-Cache National Forest.
Great Gray Owl *Strix nebulosa*	In the Intermountain Region, great gray owls occur primarily in lodgepole pine/Douglas-fir/aspen zone and in ponderosa pine. Great gray owl surveys have been conducted on the Logan Ranger District. Data collected from these surveys yielded no evidence of great gray owls. During winter some birds stay on or near their breeding territories and others make irregular movements in search of prey and favorable snow conditions. In general, it is felt that these winter vagrants only occasionally visit Utah.

3.7.1.3 Species at Risk

Species at risk have been identified in the Revised Forest Plan as "Federally listed Endangered, Threatened, Candidate, and Proposed and other species for which loss of viability, including reduction in distribution or abundance, is a concern within the plan area (USDA Forest Service 2003). Other species-at-risk may include sensitive species and state listed species." Some of these species are also migratory birds (Table 17).

The Species at Risk List was revised on February 23, 2004. The following species are species at risk which are believe to occur within the project area which have not been discussed anywhere else within this document (e.g. Endangered, Threatened, Sensitive, Management Indicator Species). See Table 3.6.

Table 3.6 Species at Risk that are not covered as Endangered, Threatened, Candidate, Sensitive, and Management Indicator Species on the Uinta-Wasatch-Cache National Forest.

Gray Catbird *Dumetella carolinensis*	"The gray catbird breeds across most of the United States and in southern Canada. It winters in Central America, as well as along the Atlantic and Gulf coasts of the United States. Old records suggest that the species may have once been common in Utah, but it is now rare in the state, breeding only in a few limited areas of north-central Utah. The gray catbird prefers dense shrublands and forested areas with thick undergrowth." UDWR 2009a
Black rosy-finch *Leucosticte atrata*	Found at high elevation near timberline. Not suspected in the project area.
Black swift *Cypseloides niger*	Nests under waterfalls. No nesting habitat found in or adjacent to the project area.
Williamson's sapsucker *Sphyrapicus thyroideus*	Lives in conifer stands. May be in project area but would be unaffected by grazing.
Brewer's sparrow *Spizella breweri*	Occurs in shrub steppe habitats in the western U.S., particularly in the Great Basin area (UDWR 2000). Brewer's sparrows breed primarily in shrub steppe habitats in Utah and are considered to be shrub steppe obligates. In Utah, Brewer's sparrows are common to very common summer residents. The species winters in the southwest U.S. and into Mexico. It nests in the mid-upper canopy of dense sagebrush and are usually located in patches of sagebrush that are taller and denser, with more bare ground and less herbaceous cover, than the surrounding habitat. Clutch size is usually 3-4 eggs. Brewer's sparrows will re-nest in a few days if the initial clutch is lost. Brewer's sparrows are primarily insectivorous during the breeding season. Loss of sagebrush steppe habitat is considered the main threat to the species. The Brewer's sparrow is known to occur within the project area.
Sage sparrow Amphispiza belli	"The sage sparrow prefers shrubland, grassland, and desert habitats. The nest of twigs and grasses is built either low in a shrub or on the ground." UDWR 2009a
Broad-tailed hummingbird	The broadtail is a common breeder in the eastern and

Selasphorus platycercus	central parts of the Great Basin. It winters primarily in Mexico. It nests primarily in riparian habitat though also occurring within aspen, ponderosa pine, Engelmann spruce, subalpine fir, and Douglas fir dominant habitats. The broad-tailed hummingbird typically requires streamside areas adjacent to open patches of meadows or grasses with good quantities of wild flowers available throughout the breeding season. This hummingbird feeds on nectar of wildflowers. Nests are from as low as 3 ft to as high as 30 ft above the ground and are often found overhanging a stream. Threats to this species would include loss of riparian habitat and lack of wildflowers. The broad-tailed hummingbird (Baldy and Lightning Ridge surveys) is known to occur within the project area.
Virginia's Warbler *Vermivora virginiae*	"Nests are typically embedded or covered with dead or decaying leaves and grasses in areas of dense brush. Dense mountain brush areas and stream side thickets at low and mid-elevations are preferred habitats." UDWR 2009a. This species may occur in the project area in thick underbrush.
Fringed myotis *Myotis thysanodes*	The fringed myotis is a small bat that occurs in most of the western United States, as well as in much of Mexico and part of southwestern Canada (UDWR 2001). The species commonly occurs in colonies of several hundred individuals. The fringed myotis has been found in Utah in a moderately wide range of habitats: lowland riparian, desert shrub, juniper–sagebrush, sagebrush–rabbitbrush, pinyon–juniper–sagebrush, pinyon–juniper, mountain meadow, ponderosa pine forest, and montane forest and woodland (Douglas-fir–aspen) (Oliver 2000). Females generally give birth to a single offspring during the summer. Beetles which are plucked from vegetation or the ground are the major prey item. It is uncertain whether this species occurs within the Ogden Ranger District, since only specimens from southern and east-central Utah have been reported in the literature (Hasenyager 1980). The fringed myotis inhabits

	caves, mines, and buildings, most often in desert and woodland areas.
Pine marten *Martes Americana*	The marten is a furbearing mammal that is about two feet in length from head to tail and yellowish-brown in color. It occurs in much of Alaska and Canada, and its range extends into several areas of the contiguous United States (UDWR 2001). In Utah, the species has been found in many of the high remote mountainous areas of the state. Pine martens prefer forest habitat, where their dens can be found in logs, hollow trees, stumps, and rock crevices. The species mates during the summer, and females give birth to a litter of one to five young during the following spring; litters are often smaller when food is scarce. Martens are typically solitary animals that may cover great distances each day looking for food. The diet of the species consists primarily of small mammals, although birds, insects, and fruits are occasionally consumed.

3.7.1.4 Management Indicator Species

The WCNF Revised Forest Plan identified the goshawk (*Accipiter gentilis*), the snowshoe hare (*Lepus americanus*), and beaver (*Castor canadensis*) as wildlife management indicator species (Forest Service 2003b:J4-J5). Monitoring of MIS populations is conducted according to the monitoring protocols established in the Forest Plan.

For all the MIS species, the most recent information is found in the 2008 MIS Report (USDA Forest Service 2008). For additional information on Forest MIS, refer to those reports.

Northern goshawk- MIS for aspen, conifer and mixed-conifer vegetation types

Goshawk surveys have been conducted within the project area. One known goshawk nest territory occurs within the Bountiful sheep allotment. A portion of the goshawk foraging area (6000 acres) occurs within the Bountiful Allotment and overlaps into the Dairy Ridge cattle allotment. The PFA and nest areas occur within the Bountiful allotment (maps of goshawk areas are located within the district files). It is likely that undiscovered goshawk territories exist within the conifer vegetation type.

Snowshoe Hare- MIS for pole/sapling aspen, conifer and mixed-conifer vegetation types

For snowshoe hare plots, the Ogden aspen grid located near Fred's Hollow occurs within the Woodruff allotment. Much of the allotment area consists of mature aspen stands (50%) which display little use by snowshoe hares.

Monitoring data suggest that the Wasatch/Bear River Range snowshoe hare population is experiencing an increasing trend (Uinta-Wasatch-Cache National Forest 2008).

Beaver- MIS for riparian vegetation types
Within the project area, beaver are known to occur within Wheeler Creek, Sugar Pine, and Peggy Hollow drainages. Historical beaver activity has been found within Silvia Hollow and at Red Rock Springs. No other beaver activity is known to occur within the area. As part of the Revised Forest Plan MIS monitoring effort, square mile sections were surveyed for beaver. Within the Ogden Ranger District, 17 survey sections occur, with two sections located within the project area. The Wheeler Creek section (13) was surveyed in 2005 and 2008 and was active in both years. This section occurs within both the Bountiful allotment and the Woodruff/Dairy Ridge Allotments. The Sugar Pine section (3) which is located in the upper portion of the watershed displayed no water. The sections surveyed within the Ogden Ranger District in 2004/2005 and 2008 and the results of these surveys are contained within the district wildlife files. In addition to the above surveys, beaver activity has been documented within the lower sections of Sugar Pine and within Peggy Hollow. See the aquatic section for additional information regarding streams.

For beaver there is currently not enough monitoring data to suggest a trend in the population from data collected on the Forest (Uinta-Wasatch-Cache National Forest 2008). Data provided by the State of Utah and presented in the 2008 monitoring report suggest that the population is static (Uinta-Wasatch-Cache National Forest 2008).

3.7.1.5 Big Game
Big game (deer, elk, and moose) and their habitat are widely distributed throughout the project area. The habitat in the project area primarily serves as summer crucial range for big game. The entire area of the Woodruff & Dairy Ridge Allotments is considered crucial summer range for elk and deer. *Crucial value habitat* is defined by the Utah Department of Wildlife Resources (UDWR) as "habitat on which the local population of wildlife species depends for survival because there are no alternative ranges or habitats available. Crucial value habitat is essential to the life history requirements of a wildlife species. Degradation or unavailability of crucial value habitat will lead to significant declines in carrying capacity and/or numbers of the wildlife species in question."(UDWR 2006). Crucial winter range exists on the allotments for moose (approximately 7,367 acres across the allotments), while none exists for deer or elk.

The project area occurs within one the Morgan/South Rich Harvest Unit. Table 3.7 displays the estimated numbers of animals and population objectives in the Morgan/South Rich Harvest Unit.

Table 3.7. Estimated numbers of animals and population objectives in the Morgan/South Rich Harvest Unit for deer, elk and moose.

Species	Population Objective	2008 Population Estimates
Deer	**12,000**	**6,100**
Elk	**3,500**	**4,400**
Moose	**640**	**485**

Information provided by Randy Wood UDWR Wildlife Biologist (13 April 2009).

3.7.2 Environment Consequences

This section describes the effects of the alternatives on wildlife species that could result from grazing within the Woodruff and Dairy Ridge Allotments. Alternative 1, the *No Action Alternative* would not allow grazing on the allotments after two years' notice to the permitees. Alternative 2, the *Proposed Action* would consist of deferred rotation on two of the three pastures annually, with adaptive management used as conditions require, meeting Forest Plan standards and guidelines (see Chapter 2 for further details on the alternatives).

The proposed action would employ an additional, adaptive management strategy which allows for adjusting the timing, intensity, frequency and management of grazing as needed to meet Forest Plan standards and guidelines. Monitoring would determine the need and frequency for administrative adjustments in the timing, intensity, frequency, and/or management of grazing. As part of the proposed action, a drift fence is proposed to be constructed on approximately the lowest mile of Middle Ridge, near the southern boundary of the Dairy Ridge allotment.

Effects Analysis Methods and Assumptions

Baseline conditions were determined through review of literature and field survey/observations. Field surveys were conducted to identify and quantify wildlife species and populations, and to characterize habitat conditions in the Woodruff/Dairy Ridge Allotment. To compare the environmental effects by alternative it was necessary to make a few key assumptions:

- Under Alternative 1, the *No Action (No grazing) Alternative*, for this analysis it is assumed that light grazing by native ungulates and other native herbivore species would maintain plant vigor and therefore, vegetation production would not be reduced.

- Utilization standards included in the Revised Forest Plan (and implemented with this project) are to maintain critical minimum residuals to protect soil, forage plant vigor, livestock diet quality, and wildlife habitat. The utilization standards would represent the percentage of use for key species at moderate grazing levels. Stubble height and utilization standards are measured on a timely basis and actions to remove livestock are implemented before standards are exceeded.

- Monitoring is conducted as identified in the allotment management plan and changes are made when conditions are not favorable or are moving away from desired future condition.

- Livestock are directed toward the use of suitable uplands through strategic salting and intensive riding, thus reducing pressure on riparian habitat, springs, and wet meadows.

- Barbed wire allotment boundary let-down fences could result in minor losses of big game by entanglement, but this would not cause noticeable changes to population numbers.

- Since the adaptive management will likely be implemented in incremental steps, change in habitat conditions will likely respond incrementally. It will be several years before this alternative would produce desired results within some of the habitat types.

General Description of Effects
Livestock grazing can affect vegetation used by wildlife in several ways. In most instances livestock grazing does not change the forest type, but influences factors such as understory vegetation cover, forage, and species composition.

The USFS portion of the allotment area consists of 7,472 acres mostly consisting of aspen (50%), grass/shrubland (28%), and conifer (21%) vegetation types (Figure 1).

Livestock grazing can affect vegetation used by wildlife in several ways. In most instances livestock grazing does not change the forest type, but influences factors such as understory vegetation cover, forage, and species composition.

Livestock and big game can influence aspen regeneration and also influence the occurrence of fire and its frequency in forested stands. Livestock use over time has changed the understory species composition within some of aspen stands in the allotment, leaving unpalatable species, such as coneflower. Livestock grazing also reduces hiding and nesting cover for species that depend on cover for security. In general, livestock grazing has decreased vegetative structural diversity in portions of the allotment, particularly those in riparian and aspen areas. A decrease in vegetation structure and species composition results in a decrease in wildlife diversity and/or abundance.

The majority of the water sources within both allotments are heavily impacted by livestock grazing. Water sources are very valuable to many wildlife species and need to be restored within the allotments to provide conditions more favorable to wildlife. Sagebrush densities within both allotments are high in most locations. These topics will be the primary focus of this analysis.

3.7.2.1 Threatened, Endangered, Proposed, and Candidate Species
Habitat for the yellow-billed cuckoos and black-footed ferret does not occur within in the Woodruff/Dairy Ridge Allotments and there have been no recorded occurrences. Therefore, the yellow-billed cuckoo or black-footed ferret will not be affected by either of the alternatives. The area that contains the Woodruff/Dairy Ridge Allotment is considered linkage habitat for the Canada lynx. The potential effects to its linkage habitat and potential prey species are discussed below.

Canada lynx. The July 3, 2003 U.S. Fish and Wildlife Service Notice of Remanded Determination of Status for the contiguous United States distinct population segment of the Canada Lynx (USDI Fish and Wildlife Service 2003a) specified that no evidence exists that certain risk factors pose a threat to individual lynx, lynx populations, or lynx habitat. Grazing was not specifically addressed because there was no information to indicate that it posed a threat to lynx.

The Allotments lies within a travel corridor for the Canada lynx rather than a permanent resident habitat. The area within the allotment was reclassified in 2002 from a Lynx Analysis Unit (LAU) to Linkage Area, due to a low percentage of primary lynx habitat found here.

The Lynx Conservation Strategy (Ruediger et al 2000) specifies the following programmatic planning guideline in Linkage Areas: "Where feasible, maintain or enhance native plant communities and patterns and habitat for potential lynx prey, within identified key linkage areas."

In relationship to effects to the wildlife corridor, the following is pertinent from the Notice: "To significantly impact a local lynx population, an activity would have to occur across a very large area (presumably at least the size of several home ranges), create a homogeneous forest that does not provide the various stand ages, species composition, and structure that are good snowshoe hare and lynx habitat, or result in a barrier that effectively precludes dispersal."

Although the lynx is not a permanent resident here, the potential effects to the lynx are related to the effects on their preferred prey, primarily snowshoe hare, but also a variety of small mammals. The effects to lynx prey species are discussed above.

Alternative 1, *No Action (No Grazing)*
For this alternative, small mammal species diversity and overall species abundance across the allotment would likely be greatest among the alternatives.

Douglass and Frisina's (1993) study displayed that an increase in vegetation cover usually reflects an increase in small mammal populations and an increase in survival rate. Actual biomass available to prey is likely to be greater with reduced grazing.

An increase in cover and forage would likely increase survivorship of snowshoe hares which could lead to slightly higher population numbers of snowshoe hares across the allotment, though a number of factors likely influence snowshoe populations.

Prey would most likely be in greatest abundance under this alternative thus making it easier for lynx to move through the area.

Alternative 2, *Proposed Action (Current Management)*
Livestock grazing under the proposed action alternative would continue to affect those species that require high levels of litter and residual vegetation within the allotment. The deferred rotation system concentrates livestock within a specific area for a short period of time, and then animals are rotated to the next area. The areas grazed early in the summer may show some recovery of vegetation forage conditions for wildlife once livestock are removed from the area, though this is dependent if weather conditions provide moisture for vegetation re-growth and recovery. The areas of the allotment utilized later would provide forage and cover benefits for the early portion of the summer for wildlife species.

Prey species abundance would be slightly decreased by the proposed action alternative, though this would not likely influence the effectiveness of the area as a *travel corridor* for lynx.

3.7.2.2 Forest Service Intermountain Region Sensitive Species

There are some Forest Service Regionally sensitive species and/or habitat found in the allotments (USDA Forest Service 2009). The effects on this species are discussed below (Table 3.8).

Of those species listed as sensitive for the Wasatch-Cache NF, the following occur or are likely to occur within the project area: northern goshawk, flammulated owl, three-toed woodpecker, and the Western big-eared bat. The wolverine, boreal owl, and great gray owl may possibly occur within the project area. The sharp-tailed grouse, greater sage grouse, bighorn sheep, and peregrine falcon are not known to occur within the project area. Currently, the pygmy rabbit and spotted bat are not known to occur on the district. None of the alternatives will affect sharp-tailed grouse, peregrine falcon, pygmy rabbit, Rocky Mountain bighorn sheep, or the spotted bat.

Table 3.8 Intermountain Region's sensitive species for the Wasatch-Cache portion of the forest and the effects of each alternative on the species.

Species	Effects of No Action (No Grazing) Alternative	Effects of Proposed Action Alternative
Northern goshawk *Accipiter gentilis*	Also a MIS. See that section for detailed discussion.	Also a MIS. See that section for detailed discussion.
Flammulated owl *Otus flammeolus*	This alternative would improve habitat for nocturnal insects across the allotment, likely increasing nest success and nestling survivorship. This may reflect an increase in flammulated owl abundance.	Livestock grazing would continue to affect foraging habitat for flammulated owls, mainly in aspen areas. Vegetation is reduced from a combination of livestock grazing and trampling. This would likely reduce the abundance of nocturnal insect species that are foraged upon. The forested portion of the allotment areas consist primarily of aspen (50% of the total area) which has displayed high use by flammulated owls. This alternative would not affect nest trees. Nest success and nestling survival are likely to be lower under this alternative.
Three-toed woodpecker *Picoides tridactylus*	The alternatives will have no effect on the three-toed woodpecker. This species nests, roosts, and forages in conifer and conifer/aspen forests and is not dependent on understory vegetation conditions.	The alternatives will have no effect on the three-toed woodpecker. This species nests, roosts, and forages in conifer and conifer/aspen forests and is not dependent on understory vegetation conditions.

Western big-eared bat *Corynorhinus townsendii*	This alternative will improve habitat for insects associated with riparian areas, wetlands, and springs. This may not influence actual bat numbers since bat populations may be more influenced by the availability of suitable roost sites or other such limiting factors. Like all alternatives, this alternative would not affect bat roosting sites, maternity colonies, or hibernacula.	Livestock grazing would continue to affect foraging habitat for bat species, mainly in riparian areas, wetlands, and springs. Vegetation has been reduced in many riparian areas from a combination of livestock grazing and trampling. This will likely reduce the abundance of nocturnal insect species that bats forage upon, though this may not influence actual bat numbers. Bat populations may be more influenced by the availability of suitable roost sites or other such limiting factors. Like all alternatives, this alternative would not affect bat roosting sites, maternity colonies, or hibernacula (Note: Cave Spring was monitored in July 2009 with no bats being observed).
North American Wolverine	As prey species expand without grazing it is expected that the wolverine would also increase.	There would be no measurable change in the population under this alternative.
Greater Sage Grouse	No grazing will improve the understory vegetation and sagebrush species that sage-grouse are dependent on. An increase in cover would likely increase grouse nest success and increase survivorship which could lead to higher population numbers of grouse.	Grazing would continue to reduce the understory grasses and forb species available for brood-rearing and summer food. Trampling of vegetation would also reduce the amount of grass and forb species, as well as the amount of sagebrush cover available to the sage-grouse.
Boreal owl *Aegolius funereus*	The effects to the boreal owl are related to the effects	The effects to the boreal owl are related to the effects

	on their prey, primarily voles. A majority of the area that is used by the boreal owl are large stands of conifer. Most of these areas are not capable acres and thus are not used by livestock. The effects of any of the alternatives would likely be negligible on boreal owl habitat or populations. Also, see small mammal effects.	on their prey, primarily voles. A majority of the area that is used by the boreal owl are large stands of conifer. Most of these areas are not capable acres and thus are not used by livestock. The effects of any of the alternatives would likely be negligible on boreal owl habitat or populations. Also, see small mammal effects.
Great Gray Owl *Strix nebulosa*	These winter vagrants only occasionally visit Utah. The effects of this alternative will be negligible on great gray owl habitat or populations.	The effects of this alternative will be negligible on great gray owl habitat or populations.

3.7.2.3 Species at Risk

Species at risk have been identified in the Revised Forest Plan as "Federally listed Endangered, Threatened, Candidate, and Proposed and other species for which loss of viability, including reduction in distribution or abundance, is a concern within the plan area (USDA Forest Service 2003). Other species-at-risk may include sensitive species and state listed species." Some of these species are also migratory birds. Impacts to those species not discussed elsewhere in the effects section will be discussed here (Table 3.9).

Table 3.9 Species at Risk that are not covered as Endangered, Threatened, Candidate, Sensitive, Management indicator species on the Uinta-Wasatch-Cache National Forest that may be found in the project area.

Species At Risk	Effects of No Action (No Grazing) Alternative	Effects of Proposed Action (Current Management) Alternative
Gray Catbird *Dumetella carolinensis*	Habitat for this species would probably increase as the catbird prefers dense shrublands and forested areas with thick undergrowth.	There would be no change in the existing habitat for this species except in the area recommended to be excluded from grazing.
Williamson's sapsucker *Sphyrapicus thyroideus*	No change in habitat for this species.	No change in habitat for this species.
Brewer's sparrow *Spizella breweri*	Removal of grazing would increase grasses and forbs within the mountain big sagebrush vegetation type thus reducing preferred Brewer sparrow nesting	Livestock grazing would maintain old and dense mountain big sagebrush areas and maintain lower herbaceous understory cover that is preferred and

Species At Risk	Effects of No Action (No Grazing) Alternative	Effects of Proposed Action (Current Management) Alternative
	habitat. In addition, susceptibility to catastrophic wildfires in the dense mountain big sagebrush areas would increase since fine fuels, such as grasses, will be more abundant. Wildfire could greatly reduce the amount of habitat available for breeding Brewer's sparrows and reduce Brewer's sparrow numbers.	utilized by Brewer's sparrows for breeding.
Sage sparrow Amphispiza belli	Feeding and nesting habitat for this species would increase.	No change from the existing condition. Habitat will continue to be affected.
Broad-tailed hummingbird *Selasphorus platycercus*	Understory vegetation diversity, especially within aspen stands, would increase. Native forb species utilized by the broad-tailed hummingbird will be more abundant. This may result in an increase in broad-tailed hummingbird abundance. This alternative would not affect nests (3-30 feet in height) or nesting habitat.	Livestock grazing would continue to affect foraging habitat for the broad-tailed hummingbird, mainly in riparian areas and adjacent uplands. These uplands are primarily tall forb and aspen communities containing species that the hummingbird uses such as tall larkspur and Indian paintbrush. These species have been reduced in many areas from a combination of livestock grazing and trampling. Since portions of each allotment are deferred and cattle are rotated between areas, the areas grazed early in the summer may show some recovery of vegetation conditions for hummingbirds once livestock are removed from the area, though this is dependent if weather conditions provide moisture

Species At Risk	Effects of No Action (No Grazing) Alternative	Effects of Proposed Action (Current Management) Alternative
		for vegetation re-growth. The areas of the allotment utilized later would provide forage benefits for the early portion of the summer for hummingbirds. This alternative would not likely affect nests (5-30 feet in height), but could affect vegetation conditions associated with lower canopy nest sites.
Virginia's Warbler *Vermivora virginiae*	Nesting habitat would increase under this alterative.	No change from the existing conditions.
Fringed myotis *Myotis thysanodes*	Effects of this alternative are similar to the big-eared bat, discussed above.	Effects of this alternative are similar to the big-eared bat, discussed above. Success of this species may be more dependent on availability of bat roosting sites, maternity colonies, or hibernacula. None are know in the area
Pine marten *Martes Americana*	Actual biomass available to prey is likely to be greater with no grazing. An increase in vegetation cover usually reflects an increase in small mammal populations and an increase in survival rate. This alternative will improve vegetation conditions for forage and cover. Small mammal species diversity and overall species abundance across the allotment will likely be greatest.	Livestock grazing under this alternative will continue to affect those species that require high levels of litter and residual vegetation, particularly in riparian areas and aspen stands.

3.7.2.4 Management Indicator Species

Northern goshawk - In view of the area the population covers and the limited area these allotments cover in respect to this population, there will likely be no measurable effect on of the northern goshawk population.

Alternative 1, *No Action (No Grazing)*
This alternative increases available forage and cover across the allotment, small mammal species diversity and overall species abundance. Prey would most likely be in greater abundant under this alternative. Increased prey abundance may increase nest success and nestling survivorship which may reflect in an increase in goshawk abundance.

Alternative 2, *Proposed Action*
Livestock grazing under this alternative would continue to affect the goshawk prey species that require high levels of litter and residual vegetation. Livestock grazing may influence nest success and nestling survival due to reduced numbers of prey species.

Snowshoe hare - Grazing by livestock and wild ungulates may increase competition with snowshoe hare for forage resources, particularly in riparian areas. Browsing or grazing can have an effect on snowshoe hare habitat by reducing the amount of available winter browse and altering the structure or composition of native plant communities.

In view of the area the population covers and the limited area these allotments cover and the fact that the primary habitat is thick understory conifer, there will likely be no measurable effect on of the snowshoe hare population.

Alternative 1, *No Action (No Grazing)*
If livestock were removed from the allotments, the vegetative structure would increase in thickness and complexity thus providing more snowshoe hare cover and winter forage. Increases in this cover and forage would likely increase survivorship which could lead to slightly higher population numbers of snowshoe hares across the allotment.

Alternative 2, *Proposed Action*
The current management alternative would continue to impact snowshoe hare by reducing cover and forage vegetation within the capable portion of the allotment. Conifer forest, which have displayed considerable use by snowshoe hares, would continue to be unaffect by grazing because they are not considered capable for livestock grazing. The fencing of the riparian area would provide some long-term benefit to snowshoe hare.

Beaver - The distribution of beaver on the allotments relates to the presence of perennial water. Within the project area, beaver are known to occur within Wheeler Creek, Sugar Pine, and Peggy Hollow. Historical beaver activity has been found within Silvia Hollow, Red Rock Spring, and Ranger Hollow. No other beaver activity is known to occur within the area. In view of the area the population covers and the limited beaver habitat within these allotments, there will likely be no measurable effect on of the beaver population.

Alternative 1, *No Action (No Grazing)*
This alternative would improve riparian conditions within the allotment and would likely provide benefits to the beaver, due to the limited existing limited habitat in the area. Changes in occupancy could occur, though large increases in the beaver population are not likely due to limited habitat. In addition, trapping likely plays a role in regulating beaver within the area.

Alternative 2, *Proposed Action*
Livestock grazing would continue to reduce the amount of willows available as forage and for use as building materials where currently available on the allotment. Cattle use woody material particularly during late summer when other quality forage is less available. Four riparian exclosures provide protection to portions of Sugar Pine, Peggy Hollow, Ranger Hollow, and Wheeler Creek.

The distribution of beaver will likely continue to be the same due to the presence of sufficient perennial water to support beavers and due to the presence of riparian exclosures. Beaver numbers will not likely change from the current condition. In either alternative, Silvia and Ranger hollow will likely be occupied by beaver in the near future due to the presence of beaver activity within Wheeler Creek.

In either alternative, Silvia Hollow will likely be occupied by beaver in the near future due to the presence of beaver activity within Wheeler Creek.

3.7.2.5 Big Game
Mule Deer. Crucial summer range within the allotments is not a limiting factor for deer populations in these deer management units. However, the reduced availability of quality forage within the summer may influence fawn condition/weights going into winter and may affect fawn winter survival. In addition, grazing can have negative effects by altering the structure and species composition (grasses, forbs, and shrubs) of aspen stands.

Alternative 1, *No Action (No Grazing)*
This alternative would improve forage conditions on summer range (amount and quality of available forage) for deer. Greater fawn weights and animal condition going into fall improve animal survival in the winter. However, actual deer numbers may not be influenced since the population is most directly affected by the availability of suitable winter range within the Morgan/South Rich Harvest Unit.

Alternative 2, *Proposed Action*
Livestock grazing would continue to reduce summer range forage and the quantity of available forage for deer across the allotments. The areas grazed early in the summer may show some recovery of vegetation forage conditions for wildlife as cattle grazing is deferred or livestock are removed from the area. The re-growth of vegetation is very dependent on weather conditions provide moisture. The areas of the allotment utilized later would provide forage benefits for the early portion of the summer for deer. However, this may not influence deer or deer populations since they are mainly affected by the availability of suitable winter range within the Morgan/South Rich Harvest Unit. The reduced availability of quality forage within the summer may influence fawn condition/weights going into winter and may affect fawn winter survival. In addition, grazing can have negative effects by altering the structure and species composition (grasses, forbs, and shrubs) of aspen and sagebrush stands.

Elk
Elk numbers are above objective for the Morgan/South Rich harvest unit. Elk populations are likely limited by the availability of suitable winter range and are managed at or near population management objectives by hunter harvest.

Alternative 1, *No Action (No Grazing)*
This alternative would improve forage conditions (amount and quality of available forage) for summer elk habitat. However, this may not influence actual elk numbers since they are currently above objective and are managed by hunter harvest. Also, since understory vegetation diversity within mature aspen stands will increase, palatable forb species used by elk will become more abundant. Riparian areas used by elk for forage, watering, and as wallows will not be affected by livestock grazing. In addition, greater calf elk weights and animal condition in the fall will likely improve animal survival in the winter.

Alternative 2, *Proposed Action*
There would be slight improvements over the existing condition in the quality and the amount of available forage for elk during early summer in the years in which the deferred timing is implemented. However, this may not influence actual elk numbers since they are most limited by the availability of suitable winter range and are managed at or near population management objectives by hunter harvest. Greater calf weights and animal condition going into fall, improve animal survival in the winter. Addition riparian protection will be provided with the fencing but other riparian areas that are used by elk for forage, watering, and as wallows will continue to be affected by livestock grazing.

Moose
Alternative 1, *No Action (No Grazing)*
This alternative would improve forage conditions (amount and quality of available forage) for moose. Riparian areas are largely limited within the allotment and currently riparian exclosures provide some protection from livestock. It is suspected the the moose population would increase under this alternative and move more towards objectives.

Alternative 2, *Proposed Action*
Livestock grazing would continue to reduce the amount of willows available as forage where currently available on the allotment. Cattle use woody material particularly during late summer when other quality forage is less available. Four riparian exclosures provide protection to portions of Sugar Pine, Peggy Hollow, Ranger Hollow, and Wheeler Creek.
Livestock grazing would affect summer and winter range forage and the quality of available forage for moose on the allotment. Riparian areas are primarily associated along the Sugar Pine, Peggy Hollow,Ranger Hollow and Wheeler Creek. Browse species consist primarily of willow species within the area. A portion of Wheeler creek currently is protected from the effects of livestock grazing by a riparian exclosure installed approximately 4 years ago.

Small Mammals
Alternative 1, No Action (*No Grazing)*

This alternative would improve vegetation conditions for forage and cover. Small mammal species diversity and overall species abundance across the allotment would likely be greatest.

Alternative 2, *Proposed Action*
Livestock grazing under this alternative would continue to affect small mammals that require high levels of litter and residual vegetation, particularly in riparian areas and aspen stands. Areas that are fenced to exclude livestock within the allotment or that are rested early in the season would provide forage and cover benefits for small mammals.

3.7.3 Cumulative Effects

This section discusses the effects of past, present, and reasonably foreseeable future connected and cumulative actions, including the proposed action on wildlife.

The area of influence for the cumulative effects analysis for wildlife is the project area for a majority of the species. For species with large home ranges/territories or those which make large movements (e.g. lynx and wolverine), the area of influence is larger than the Ogden Ranger District and includes adjacent lands (primarily to the north and south). Big game species such as moose and elk are managed by UDWR within harvest units which includes a portion of USFS managed lands and lands of other ownership (primarily private land ownership). The Ogden Ranger District is located within a portion of a wildlife corridor that has regional importance in providing linkage to other larger habitat areas. This is especially true for forest carnivores such as the Canada lynx.

The major influences on wildlife and their habitats within the Allotments have been livestock grazing (which affects cover, forage, and vegetation composition and species diversity), fire suppression (which has reduced the presence of early successional vegetation classes) and roads, trails, and winter recreation use (which has affected wildlife through disturbances). Timber harvest has occurred within portions of the allotment and has altered the forest age classes within the area which has likely been beneficial to many species of wildlife. Fire has had minor affects to wildlife in the allotment area and within the Ogden Ranger District. Reasonably foreseeable future actions that are proposed within the allotment area consist of the possible installation of the Ruby Pipeline on the north side of the Woodruff Allotment. This project occurs within an existing pipeline corridor and effects to wildlife species would be minimal and primarily be limited to a short time period during installation.

Many of the activities described below make changes in vegetation successional stages which in many instances are beneficial to many wildlife species, especially considering that a majority of the habitat types within the Wasatch-Cache NF are in the mature and old classes.

Timber Harvest Projects
Overall, timber harvest has had a minor affect on wildlife within the Ogden Ranger District. The majority of the forest type is old or mature. Past conifer timber harvest benefited species (those which prefer early successional stands) by the creation of openings and young conifer and aspen stands. This is especially true for species such as the snowshoe hare, which prefers young lodgepole pine stands.

Wildland Fire, Prescribed Burn Projects, and Suppression Activities
Fire has had minor affect on wildlife in the area. Fire suppression has likely had the greatest affect by reducing the abundance of species that prefer early successional vegetation classes. Fire suppression has reduced habitat for wildlife species that utilize aspen. Prescribed fire and natural fire (including fire use) has and will benefit some wildlife species within the area by creating early successional stages and maintaining diversity in stand age and structure. The Monte Cristo prescribed burn has occurred within the project area. Overall, prescribed fire has had a minor effect on wildlife in the area. The majority of the forest type is old or mature. Past burns have benefited those species which prefer early successional stands. Prescribed fire and natural fire benefits some wildlife species by creating early successional stages and maintaining diversity in stand age and structure, beginning to restore a balance of successional stages, moving the district closer to properly functioning condition (PFC).

Recreation
Non-motorized trails usually have reduced or minor effects to wildlife species, though this is dependent on the amount and location of use. The amount of vegetation/habitat directly affected by a trail is very limited. Wisdom et al (2004) found that recreational activities have little difference in the measurable response during ATV, mountain biking, horse-riding, and hiking activities for mule deer. Wisdom et al (2004) found that recreational activities have a substantial effect on elk behavior and that the reactions of elk were more pronounced during ATV and mountain biking activities than those of horse-riding and hiking.

Past and proposed land exchanges typically have beneficial effects to wildlife species by consolidating lands into larger blocks, simplifying management and potential effects. In some of the past exchanges, the USFS has obtained more acres than exchanged which usually benefits a greater number of species, though it is dependent upon on the specific habitat types being exchanged.

Urbanization and development along the Wasatch Front have affected wildlife species, especially big game species dependent on winter range habitat. The amount and quality of winter range for deer and elk is primarily the limiting factor for their populations. For some species, studies have shown a strong negative relationship between higher road density and species presence. The effects of urbanization and increased road densities within watersheds adjacent to USFS managed lands especially along the Wasatch Front have affected wildlife species and the movements of some species. Within some watersheds, road densities on private lands would likely exclude use by some forest carnivore species. Continued development of adjacent lands will likely influence big game populations and habitat within the Cache Harvest Unit and to a lesser extent within the Morgan/South Rich Harvest Unit.

Disturbance from motorized vehicles has affected wildlife species within the allotment area and is likely to increase with human population increases and the increased popularity of ATVs and snowmobiles. Big game and other wildlife usually will avoid or reduce the use of areas within approximately ¼ mile of travel ways.

Treatment of Noxious Weeds

Existing and proposed noxious weed treatment projects will improve vegetation/habitat conditions for wildlife species. Loss of valuable wildlife habitat (e.g. big game range, riparian habitat) to noxious weeds can affect a range of species. These projects will improve vegetation conditions and wildlife habitat, thus benefiting many wildlife species.

Riparian Exclosures

The Sugar Pine, Peggy Hollow, and Ranger Hollow riparian exclosures were constructed to reduce livestock effects (primarily from cattle) within the spring, wet meadows, and riparian habitat. This project benefits a variety of species such as elk, deer, moose, beaver, small mammals, and a variety of neo-tropical birds.

Conclusion

The direct and indirect effects from grazing on wildlife relates primarily to effects on vegetation structure and composition. The effect of implementing the proposed action or the no action alternative varies by species and by the specific alternative as discussed above. As disclosed above, the effects would generally be minor and would not affect populations or trends. In all instances, effects of implementing the proposed action in combination with effects from past, on-going, and reasonable foreseeable future actions would not significantly affect wildlife species or their habitats.

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Chapter 4 – Response to Comments

Letter/Comment Number	Comment	Response
1-a	Adaptive management has been a cornerstone of Forest Service management approaches. For example, adaptive management's plan - implement- monitor - evaluate and repeat cycle is the backbone of the 1982 NFMA regulations, which the original and revised WCNF LRMPs rely upon. The expiring permits are based on that adaptive management approach. But the proposed action is described only as implementing an adaptive management approach - as if that is new. So far as we can see, nothing is new there. The current and past permits have also been based in that approach. We see the problem as more of a product of a failure to vigorously adhere and respond to the results of the adaptive management strategies and NFMA based standards that are and have been in effect for years. The problem is more of a failure to monitor and enforce legal limits as established in the LRMP. The LRMP standards have mandated for years that cattle are not allowed to graze in excess of its riparian area standards.	The proposed action does include different management actions than previously employed. In order to promote better riparian and aquatic health in the riparian area of Silvia Hollow between William Sping and Wheeler Spring, a drift fence is proposed to be built along the lower mile of Middle Ridge. This fence is proposed to be built along a previously used fence alignment to help improve cattle distribution and would reduce cattle impacts to fisheries and riparian habitat in the Silvia Hollow drainage between Wheeler Spring and William Spring. This design feature will help move plant, soil and aquatic conditions in the riparian area toward the desired future condition. See the Proposed Action (Section 1.4) for more details on this design feature.

1-b	Nothing genuinely new is proposed, so far as we can tell. Everything described can (and apparently should have) been done under the expiring permits and current LRMP. The real new thing proposed is a vigorous promise to finally start monitoring and enforcing the LRMP as should have been done in the past. We think this indicates a greater level of transparency may be needed. We recommend a component of the proposed action include rapid if not real time-web-based public updates on monitoring and enforcement results, successes, changes, and failures. Without something like this why should one be convinced conditions will change?	As mentioned in response to comment 1-a, there are management actions in the proposed action that were not employed on the allotment previously. The drift fence on Middle Ridge is a design feature that will help move plant, soil and aquatic conditions in the riparian area toward the desired future condition. Furthermore, if monitoring indicates that the conditions on the allotment are not moving toward desired future conditions, then other management actions can be taken to move conditions in the desired direction. These elements, combined with specific monitoring practices at key areas are designed to move resource conditions in the allotments to the desired future condition.
1-c	"In UEC v Troyer the 10th Circuit found that the 1982 NFMA regulations apply to projects implementing the Uinta and Wasatch-Cache LRMPs, due to the active decision to apply and go with the 1982 rules in the 2003 LRMP EIS/ROD, well after subsequent NFMA regulations had been issued (but not used). UEC v Troyer, 479 F.3d 1269, 10th Cir. 2007. The Forest is required by 36 CFR section 219.19 and 219.27 (1982) to monitor populations of all native and desirable non-native species to ensure that adequate habitat and viable populations are maintained. The 2003 Wasatch-Cache Forest Plan explicitly cites and incorporates the 1982 NFMA regulations, so they will need to be applied in the analysis and review of this decision. "Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate	The monitoring requirements for wildlife are those included in our LRMP. The Department has determined that the transition provision of the 2000 planning rule is currently in effect (WO letter, July 17, 2009). Effects on wildlife from continued cattle grazing on these allotments are fully documented in the EA, Wildlife Section (Section 3.7).

	species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area.	
1-d	USDA Departmental Regulation 9500-4, which is in effect today, provides further direction to the Forest Service, expanding the viability requirements to include plant species: "Habitats for all existing native and desired non-native plants, fish, and wildlife species will be managed to maintain at least viable populations of such species. In achieving this objective, habitat must be provided for the number and distribution of reproductive individuals to ensure the continued existence of a species throughout its geographic range ... Monitoring activities will be conducted to determine results in meeting population and habitat goals." This is a project and proposed action that proposes to directly, indirectly, and cumulatively impact wildlife individuals and populations significantly as well as (through permitted grazing) to manipulate and alter major structural components of wildlife habitat, alter soil stability and change the vegetative cover. Before doing this significant action, the Forest needs to modify the proposed action such that it will not reduce native plant and animal populations and distributions to less than the minimum viable populations.	Effects on wildlife from continued cattle grazing on these allotments are fully documented in the EA, Wildlife Section (Section 3.7). Effects on rare plants and vegetation are disclosed in the EA, Section 1.9, Rare Plants, and Section 3.3, Rangeland Resources, respectively. Fish surveys have been conducted on fish bearing streams within the allotments, 2000 and 2006; Sensitive species viability is discussed (EA, Section 3.2 and aquatic specialist report).
1-e	Since habitat for mollusks, amphibians and tall forbs are directly impacted by current and proposed grazing levels, the Forest needs to modify the proposed action such that it address and resolves all direct and indirect impacts to mollusks, native amphibians and tall forb communities and their habitat.	The proposed action is designed to bring conditions in the allotment into compliance with forest plan standards relative to mollusks, amphibians and tall forbs. Bonneville cutthroat trout are the management indicator species for aquatic habitats. Population information and sensitive species viability are discussed in the EA, Section 3.2 (also see aquatics

		specialist report). Amphibian surveys have been conducted throughout these allotments and are discussed in the EA, Section 3.2 (also see aquatics specialist report).
1-f	There also needs to be a rigorous presentation and analysis of the effects to TES and proposed sensitive flora and fauna. Original surveys should be conducted in the project area. These issues should be treated as driving issues that inform the development of the proposed action and alternatives.	Fish surveys have been conducted on all fish bearing streams within the allotments in 2000 and 2006 (see aquatics specialist report). Grazing effects to aquatic species are discussed in the EA, Section 3.2.
1-g	The proposed action doesn't have any clear change in direction that would respond to insufficient species diversity conditions in the aspen stands. What specific changes are being made now to address this substandard and undesirable condition? Grazing reduces the density and vigor of grasses which often out-compete tree seedlings, leading to dense stands of fire-prone small trees. This is a significant issue that needs to be used to drive alternative development. We believe that domestic livestock grazing impacts on aspen and willow regeneration needs to be identified as a significant issue that is carried forward in the EA analysis, and used do drive the development of an alternative that focuses on avoiding impacts to willow and aspen community health. Bartos and Campbell (1998b) noted a 60% decline in aspen in the six National Forests in Utah. They state: Changes in the abundance of aspen dominated landscapes have occurred over the past 125+ years partly as a result of livestock grazing, wildlife use and a reduction in fires. The historical fire regime was altered in the mid-1800's after European settlement. Fire exclusion resulted from a combination of excessive grazing, timbering, and people extinguishing wildland fires. Grazing removed the fine fuels which generally carried the fires.	Existing conditions involve many factors and are a result of the number of years since last disturbance (such as fire), drought, site conditions, ungulate grazing, and other factors. Bartos encourages recognition of the factors that affect the condition and reestablishment of aspen and encourages management of aspen communities appropriately based on their location and interaction with other aspects of the environment. However, the primary issue of aspen regeneration is not grazing, but the incidence of stand-replacing events (such as fire) and management that will allow regeneration of the existing clones. The analysis of grazing authorization at the project level is not the appropriate scale for evaluation of aspen ecosystems. Aspen regeneration is more appropriately addressed at the landscape scale, described in Management Requirements, EA, Section 2.5.

1-h	In another study, Bartos and Campbell (1998a), using figures from research by Gifford et al (1984) noted 2.83 inches of water lost when fir forests replace aspen and 7.32 inches lost when spruce replaced aspen, the authors calculated that 250 to 500 acre-feet of water/1,000 acres was lost through transpiration annually, depending on the conifer species replacing aspen. Since about 1.5 million acres of aspen have been converted to conifers in Utah, this translates to an annual loss of water for stream flow and plant production of 375,000 to 750,000 acre-feet per year. Kay and Bartos (2000) evaluated existing aspen exclosures on some of the National Forests in Utah. These were studied to determine the effects of livestock, deer and elk on aspen regeneration and associated vegetation. Five of eight exclosures had three-part construction that provided total exclusion, livestock exclusion and combined use. Aspen within all total exclusion plots successfully regenerated without the influence of fire or other disturbance. Aspen subject to browsing by wildlife (deer) either failed to regenerate successfully or regenerated at stem densities (2498/ha) significantly lower than on total exclusion plots (4,474/ha). On combined use plots, most aspen failed to regenerate successfully or did so at low densities (1,012/ha). Herbivory by ungulates altered understory vegetation. Utilization by deer reduced shrubs and tall palatable forbs and favored growth of grasses. Combined use including livestock reduced native grasses and promoted introduced species and bare soil.	Although this is important information regarding aspen communities, the analysis of grazing authorization at the project level (the scope of this environmental analysis) is not the appropriate scale for evaluation of aspen ecosystems. Aspen regeneration is more appropriately addressed at the landscape scale, as described in the Management Requirements, Section 2.5 of the EA.
1-i	Wambolt et al (2001) studied long-term recovery of big sagebrush habitats in southwestern Montana following prescribed fire. One aspect of their study involved characterization of the perennial grass cover for these areas. In the unburned sites they studied, perennial grass cover averaged 45.6%, ranging from 20.1% to 61.7%. Welch (in press) measured big sagebrush canopy cover, perennial grass cover and bare ground in 14 ungrazed kapukas in southern Idaho	The information provided was taken into consideration in the effects analysis disclosed in the EA, Chapter 3, Section 3.3.

	during 2000. He found sagebrush canopy cover ranged from 14 to 31% with a mean of 23.6%. Perennial grass cover ranged from 29 to 58% with a mean of 43.5%. Bare ground ranged from 1 – 21% with a mean of 8.6%.	
1-j	Aspen decline and lack of successful aspen regeneration are well known problems on this National Forest, and on this Ranger District. We believe that this is also the case across the Monte Cristo area. The cumulative effects of permitted livestock grazing in this section of the Monte Cristo Range significantly impact and impair the ability of aspen forests to perpetuate. The proposed action does not address this conflict among alternative uses of the available resources. In light of the above, we believe that an action alternative needs to be developed that includes: • Identification of each pasture in the analysis area that has inadequate aspen stems in the 1 to 5 foot height classes. (These are the classes most heavily impacted by sheep grazing.) • Rest from domestic grazing for each such pasture until a new cohort of aspen moves through this height class and reaches 5 feet. • Adaptively manage rest/use of each pasture after that in light of continued monitoring of aspen recruitment in the 1-5 foot height class.	Requiring a specific number of aspen trees in the under 6-foot height class is not part of forest plan direction. As included above, aspen regeneration is more appropriately addressed at the landscape scale, and was addressed in Forest Plan guideline 14. This directs us to have a balanced range of seral stages within the landscape. This direction has been included in the Management Requirements, Section 2.5 of the EA.

1-k	The Forest Service's NEPA implementing procedures do not explicitly mandate consideration of impacts to migratory bird resources. However that does not obviate the duties under the MBTA and EO 13186 to take all reasonable steps to avoid taking of migratory bird resources. This includes migratory bird habitats. The site-specific analysis for this project must include a rigorous analysis of effects to migratory birds, and use that analysis to inform the development of the proposed action and the range of alternatives. The Migratory Bird Treaty Act (MBTA) makes it unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs.[1] Executive Order 13186 issued in January of 2001 re-instituted the responsibilities of Federal agencies to comply with the MBTA. The proposed action negatively impacts migratory bird resources, and there is no evidence of efforts taken (e.g. assignment of additional mitigation measures) to avoid take. It's well known that many migratory bird species are currently declining across the region. This makes compliance with both the MBTA, and Executive Order 13186 critical with implementation of this project.	Effects on migratory birds from continued cattle grazing on these allotments are fully documented in the EA, Section 3.7. As indicated in the effects analysis, adequate habitat for migratory birds will be maintained.
1-l	Lynx have crossed this National Forest a number of times in the last few years, and are likely to use the habitat in the allotments in the coming years as they continue to disperse from north of this identified Lynx Corridor, as well as from the south (from the CO populations). We encourage the Forest to implement mitigation measures in the proposed action that significantly exceed the LCAS standards and guidelines, as if this was formal LAU. This is particularly important because the LCAS standards and guidelines are not sufficient in and of themselves to ensure that an effective program to recover this species and habitat actually occurs on the Forest, as required by the ESA. As indicated in the LCAS, domestic grazing pressures on lynx habitat are known to be negative and substantial.	The effects to the Canada lynx from continued cattle grazing on these allotments is disclosed in the EA, Section 3.7. A determination of "not likely to adversely affect" was made and documented in the Biological Assessment. The US Fish and Wildlife Service concurred with this determination in a letter dated September 8, 2009 (available in the project record).

1-m	We do believe that the issues and concerns surrounding the project are substantial enough to merit circulating the EA for the public to read or comment on prior to the issuance of a final decision. Doing this goes towards involving the public in the preparation of your EAs to the greatest extent practicable. In the big picture, doing this is certainly reasonable and fair, and we believes it works to promote better decision-making.	The public was provided an opportunity for early and meaningful involvement in this environmental analysis. Preliminary information was provided during scoping. Respondents' concerns were considered in identifying issues and developing alternatives. Public comments were considered, incorporated into the analysis as appropriate, and responded to in Chapter 4, the Response to Comments. We believe this to be appropriate opportunity for the public to provide early and meaningful input.
2-a	I disagree with the relocation of the monitoring site in Sugar Pine. We built a drift fence across the canyon to improve the area in Sugar Pine below Peggy Hollow. The Forest Service then came along and moved the site to a place where the cattle had to go for water. You then said the site was overused. Why don't you give us credit when we improve an area? Leave the site where it was and show the improvements we are making.	The original study location in Sugar Pine will continue to be read. Additional study locations may be added if needed (See EA, Section 2.4).
2-b	I...think that as an associatioin we should be involved in the monitoring process of the various sites on the allotment. We should also be involved when these sites are chosen for monitoring. The sites you choose seem to be too close to watering holes and places cattle naturally go for shade or trail to and from certain areas.	Monitoring sites are located in areas representative of the allotment as a whole and are chosen by the FS Interdisciplinary Team. Additional study locations may be added if needed (see EA, Section 2.4). Cooperative monitoring by the permittee or other interested members of the public is encouraged by the Forest Service. A monitoring agreement should be in place before cooperative monitoring begins.
2-c	Raising the ground cover in the aspen stands seems to me that this is just another unrealistic demand on us as an association. It's hard for me to understand this logic, when in the recent past the Forest	Field surveys indicate aspen stands do not meet Forest Plan DFCs for ground cover (see EA, Section 3.5, Soils). Forest Plan

	Service has burned the aspen stands including the ground cover in those stands.	Guideline 71 (G71) would be implemented to bring about improvement in these conditions.
2-d	Your document stated that the association is responsible for all cattle being in the right pasture. Most of the problem with cattle being in the wrong pasture is not the association's fault but rather hunters, fishermen, woodcutters and four wheeler enthusiasts also contribute to this problem.	Range and livestock management responsibility is included in the term grazing permit general terms and conditions, Part 2 Sec 8(a-i).
2-e	I think if the Fish and Game has an idea to build a fence then they should be responsible for the construction of the fence and also the maintenance of that fence or enclosures.	The fence was proposed by the Forest Service in order to mitigate effects to the stream channel caused by cattle grazing. Part 2 Sec 8(h) of the term grazing permit states "The permittee will pay the costs of, perform, otherwise provide for the proportionate share of cooperative improvements and management practices on the permitted area when determined by the Forest officer in charge that such improvements and practices are essential to proper protection and management of the resources administered by the Forest Service."
3-a	The one thing that would help overcome high impact in the specific mentioned problem areas would be to develop water in the areas where there is no water. This could be done with pipelines. This would be the best and have the most long term effect of distributing cattle and wildlife from high impact areas to areas which have little impact.	The proposed action provides for adding trough sites to the Ranger Hollow pipeline (see EA, Section 2.4). It also identifies adding additional water sources across the allotments as an adaptive management tool.
3-b	Past fencing of water holes has increased impact on other riparian areas and have created seed beds for canadian thistle and weeds which create more of the same as the seeds wash downstream. There are large areas on this allotment which have no available water. Water is what draws cattle, wildlife, and birds. Develop	The proposed action provides for adding trough sites to the Ranger Hollow pipeline (see EA, Section 2.4). It also identifies adding additional water sources across the allotments as an adaptive management tool.

	water in these areas and the impact of other high impact areas will cure themselves.	
4-a	Any listing of fundamental issues, in addition to those listed in the notice, should include: the adverse impacts [of] channel down-cutting on the health, structure and function of riparian areas.	The effects of channel cutting on the function of riparian areas is discussed in Aquatics Resources (Section 3.2) and Water Quality (Section 3.6) of the EA.
4-b	Any listing of fundamental issues, in addition to those listed in the notice, should include: the degradation of all water sources and why this forest resource is not protected from cattle trampling.	This issue is one that was analyzed in detail in the EA. Water Quality is discussed in Section 3.6 of the EA; Aquatic Resources are discussed in Section 3.2 of the EA. Furthermore, the proposed action includes a design feature that addresses in part effects from cattle grazing in riparian areas. See Section 2.4 for details on how the proposed drift fence will improve conditions on water resources in the allotment.
4-c	Any listing of fundamental issues, in addition to those listed in the notice, should include: re-examine the evaluation of this area as being suited and capable for the current cattle numbers.	The Forest Service monitors utilization levels to determine proper stocking and grazing capacity. Please see Rangeland Resources, EA, Section 3.3.
4-d	Public scoping should be an opportunity for the Forest Service to facilitate and broaden the exchange of information regarding forest resource conditions. I believe it would be helpful to share the information collected by the ID team and others over the past several years.	Monitoring reports and specialist reports considered in this analysis are included in the project file and are available for public review under a Freedom of Information Act (FOIA) request.

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Appendix A – Map Depicting Class I, II, II Riparian Areas

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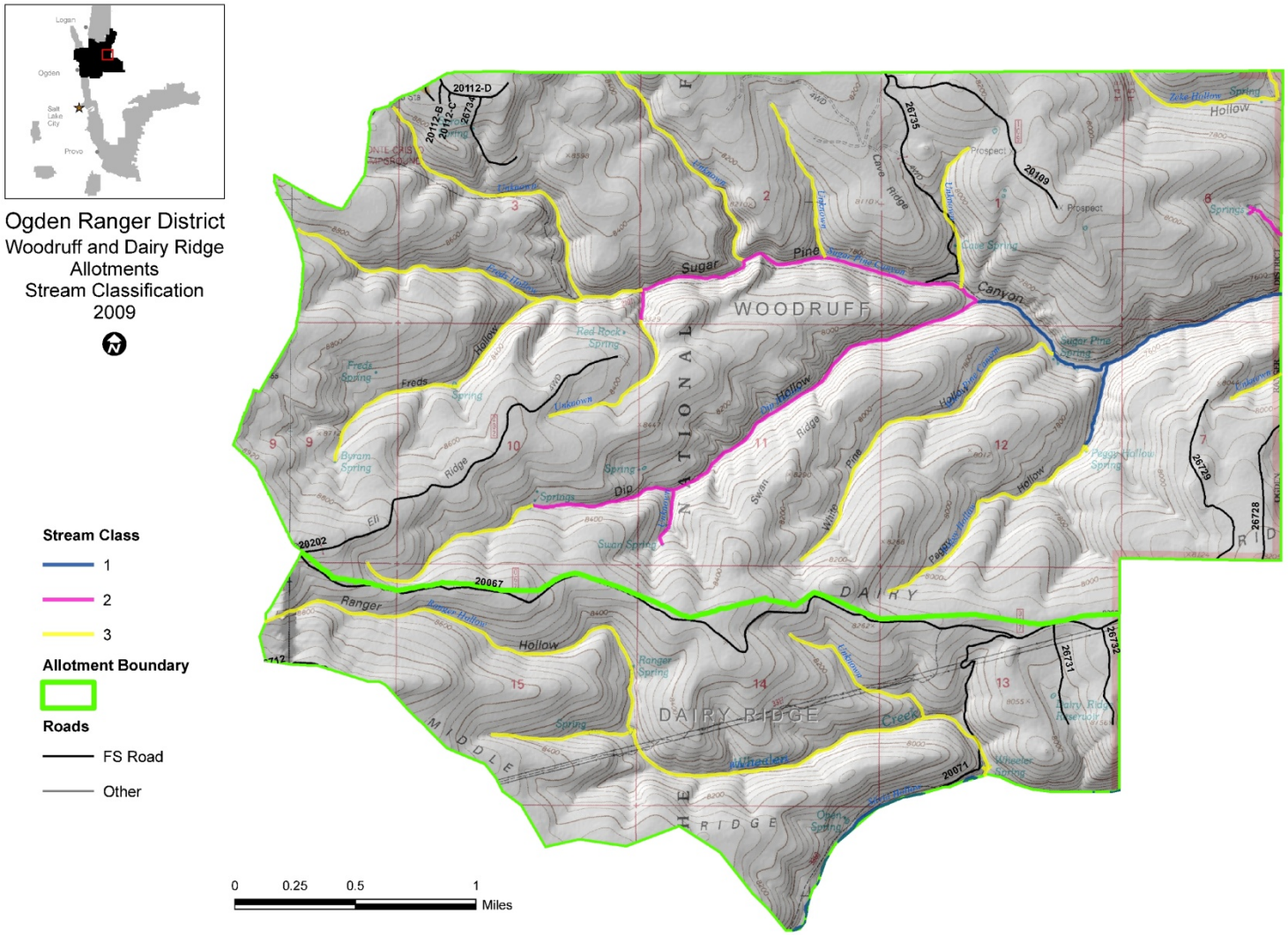
Ogden Ranger District
Woodruff and Dairy Ridge
Allotments
Stream Classification
2009
Stream Class
1
2
3
Allotment Boundary
Roads
FS Road
Other
0
0.25
0.5
1
Miles
WOODRUFF
DAIRY
DAIRY RIDGE
Sugar
Pine
Canyon
Ranger
Hollow
Ridge
Creek
Freds
Spring
Byram
Swan
Red Rock
Zeke Hollow
Cave
Prospect
Peggin Hollow
Sugar Pine
Wheeler
Ogden
20112-D
20112-B
20112-C
26734
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