11-2005

Richfield Fire Management Plan Environmental Assessment

U.S. Department of the Interior, Bureau of Land Management

United States Department of the Interior
Bureau of Land Management

RICHFIELD
FIRE MANAGEMENT PLAN
ENVIRONMENTAL ASSESSMENT

UT-050-04-045

November 2005

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

ENVIRONMENTAL ASSESSMENT (EA) # UT – 050- 04 -045

Richfield Fire Management Plan EA

This unsigned FONSI and the attached EA #UT- 050- 04 -045 for the Richfield Fire Management Plan are available for public review and comment for 30 days beginning on January 17, 2006.

Based on the analysis of potential environmental impacts in the attached EA and consideration of the significance criteria in 40 CFR 1508.27, I have determined that with required and proposed protection measures the Richfield Fire Management Plan would not result in significant impacts on the human environment. An environmental impact statement (EIS) is not required.

The decision to approve or deny the Richfield Fire Management Plan, and if appropriate a signed FONSI with rationale, will be released after consideration of public comments and completion of the EA.

_____ _____

State Director Date

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CHAPTER 1. PURPOSE AND NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) documents results of an analysis of proposed changes to the current management of wildland fire and hazardous fuels for the Bureau of Land Management (BLM) Richfield Support Center. Proposed revisions of the Richfield Fire Management Plan (FMP) serve as the "Proposed Action" for this EA. The revised FMP incorporates current planning requirements associated with fire management on public lands, including wildland fire management and fuel treatments. The EA analysis is designed to ensure compliance with the National Environmental Policy Act (NEPA). It allows determinations to be made as to whether any "significant," as defined by the President's Council on Environmental Quality (CEQ) in Regulation 40 CFR 1508.27, impacts could result from the analyzed actions.

An EA provides evidence for determining whether preparation of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) statement is necessary. A FONSI and Decision Record (DR) briefly present the reasons why implementation of the Proposed Action would not result in significant environmental impacts (effects) beyond those already addressed within other NEPA and BLM planning documents. If the decision-maker determines that this project would have significant impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a DR may be signed for the EA approving the alternative selected. The DR would identify the fire management decisions associated with the FMP and would provide the language upon which future fire management planning and implementation actions could tier (as per 40 CFR 1502.20). Future site-specific projects would analyze issues in additional implementation-level NEPA documents.

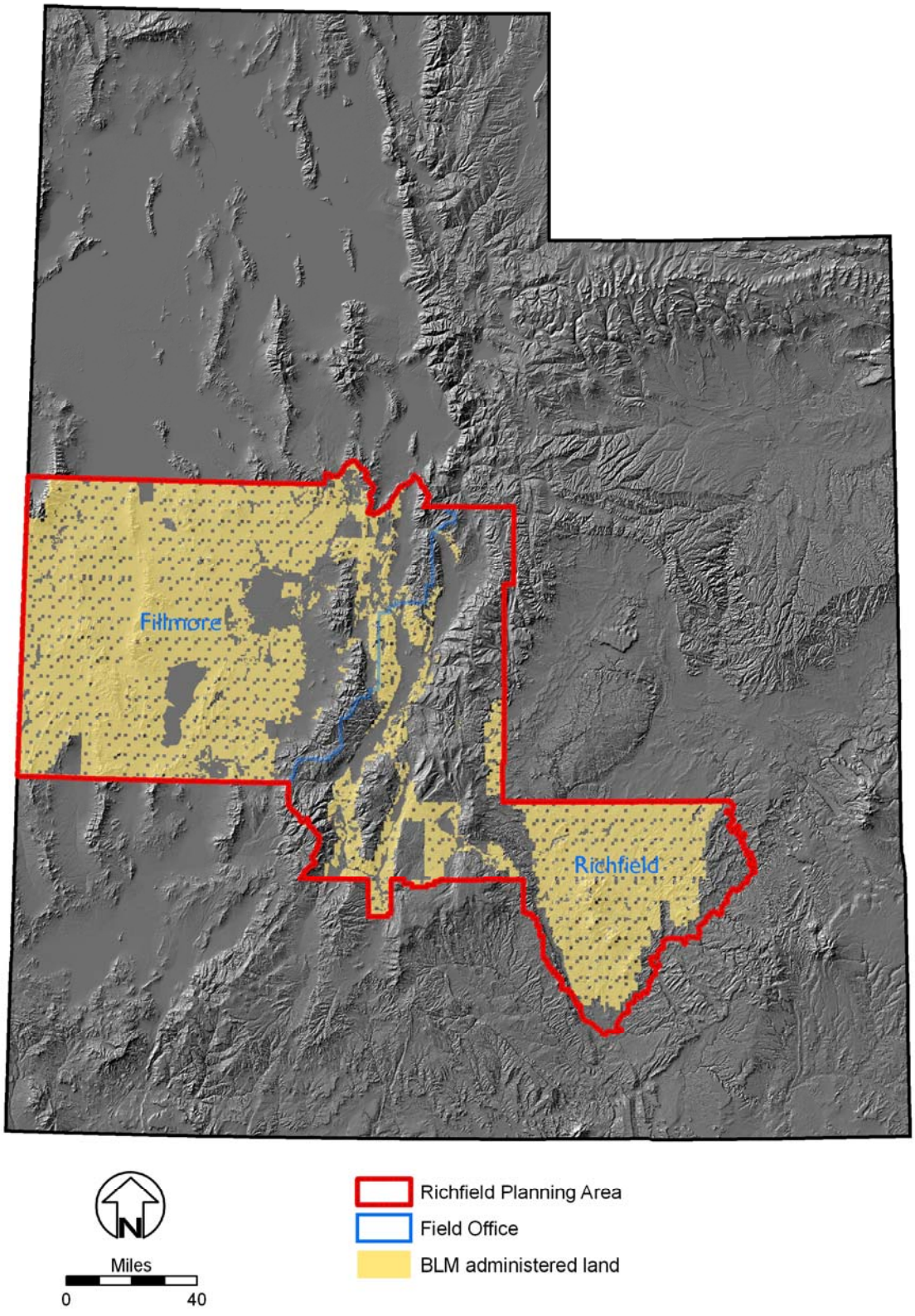
Issues identified for analysis within this EA are included as **Appendix A** (Interdisciplinary Team [IDT] Analysis Record Checklist). This appendix includes the resource concerns identified in the EA, including those resources considered as Critical Elements of the Human Environment, and related issues derived from the BLM, affiliated agency resource reviews, and comments received during the public scoping process.

1.2 BACKGROUND

The Richfield Support Center evaluated its current FMP and determined it did not fully comply with current federal fire management direction outlined in: *Federal Wildland Fire Management Policy and Program Review* (USDI and USDA 1995); *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDI and USDA 2001a); and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy* (USDI and USDA 2001b). Additionally, the focus on hazardous fuel reduction called for by the National Fire Plan and Healthy Forests Restoration Act of 2003 was not anticipated at the time the current FMP was written. Based on this, a revised FMP was prepared.

The planning area encompasses approximately 10,500,000 acres of land owned or managed by various entities (e.g., public, private, and state). BLM lands within the planning area account for approximately 6,600,000 of these acres. BLM lands are administered by the Fillmore and Richfield Field Offices. The Proposed Action and the No Action Alternatives consider actions only on BLM-administered lands. The acreages presented in this EA are approximate, due to slight variations in geographical information system data sets. The variations represent an insignificant quantity of land area and have a negligible effect on analyses of fire management action impacts. **Figure 1.1** illustrates boundaries of the Richfield Support Center planning area, two field offices, and BLM-administered lands.

FIGURE 1.1: RICHFIELD PLANNING AREA, FIELD OFFICES, AND BLM-ADMINISTERED LANDS



1.3 NEED FOR PROPOSED ACTION

National fire management policy has evolved in response to increased fatalities, property losses, local economic disruptions, and risks to ecosystems associated with increasingly severe wildland fire seasons and increasing wildland urban interface (WUI) conflicts. As mandated by national policy, federal agencies must change their fire management practices to reflect protection of human life and safety and reduce risks to natural resources and private property. Current scientific understanding of the benefits of fire to natural ecological processes needs to be incorporated into the management of fire. Successful revision of the FMP would result in fire management direction that is compliant with national and interagency direction.

Federal Wildland Fire Management Policy and Program Review (USDI and USDA 1995) and *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDI and USDA 2001a) directed that FMPs be developed for all areas of burnable vegetation on federal lands.

The revised FMP formally documents the fire management program and is based on existing Management Framework Plans (MFPs) and Resource Management Plans (RMPs). Together, both MFPs and RMPs are more broadly known as Land Use Plans (LUPs). FMPs are the fire manager's primary guide for planning, and in some instances, implementing fire-related direction on the ground. FMPs incorporate the broad LUP fire management direction.

The revised FMP would result in a document that provides fire management direction that is compliant with national and interagency direction and that has the ultimate goal of improving firefighter and public safety, reducing fuel loads, and ecologically benefiting landscapes. The management direction is further refined within the revised FMP through the use of land area subdivisions called Fire Management Units (FMUs).

1.4 PURPOSE OF THE PROPOSED ACTION

The BLM Director of the Office of Fire and Aviation for all areas of burnable vegetation has instructed all field offices to develop a new FMP or revise their existing FMP for all areas pertaining to wildland fires. The revised FMP needs to identify and integrate all federal wildland fire management guidance, direction, and activities required to implement national fire policy and program direction from the following: *Federal Wildland Fire Management Policy and Program Review* (USDI and USDA 1995); *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDI and USDA 2001a); and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy* (USDI and USDA 2001b).

Goals in the FMP include restoring wildland fire to ecosystems when feasible and to minimizing undesirable fire effects. They are based upon scientific information and land, resource, and fire management objectives. Ecosystems have evolved with, and adapted to, specific fire regimes. Fire exclusion and control of wildfires have altered the natural process of periodic burning and have resulted in fuel buildups, increases in understory and brush, and increases in stand density (Wright 1990, Covington and Moore 1994). Due to these alterations, unwanted wildland fires have grown in size, intensity, and frequency. Wildland fire, as a critical and necessary process, should be reintroduced into these fire dependent ecosystems. Where wildland fire cannot be safely reintroduced because of hazardous vegetation buildups, some form of hazardous fuels reduction must be considered, particularly in WUI areas.

The purpose of the Proposed Action would be to move toward desired wildland fire conditions (DWFCs). The general DWFC is to have ecosystems that are at a low risk of losing ecosystem components following wildfire and that function within their historical range. DWFCs are described using fire regime and condition class (FRCC). FRCC is a description of vegetation conditions based on the change from natural fire regime;

including effects of wildfire suppression (fuel loading and encroachment) and species invasion. There are three classes:

- FRCC 1: Within historical range for fire return interval and vegetation attributes.
- FRCC 2: Moderately altered from historical range.
- FRCC 3: Substantially altered from historical range and vegetation attributes.

The following underlying objectives drive the need to revise the Richfield FMP:

- Protect human life. This is the prime suppression priority. Setting priorities among protecting human communities and community infrastructures, other property and improvements, and natural and cultural resources would be done based on the values to be protected, human health and safety, and costs.
- Use the full range of fire management actions to achieve ecosystem sustainability.
- Reduce hazardous fuels.
- Restore ecosystems.
- Protect communities at risk.

Acreages in the Proposed Action are based on working toward these goals and objectives.

1.5 CONFORMANCE WITH BLM LAND USE PLANS

The Proposed Action was reviewed for potential conflicts among the LUPs. **Table 1.1** includes these relevant LUPs. The Proposed Action would replace existing management goals, objectives, and management actions with current direction at an FMP level as previously described. The proposed FMP was determined to be in conformance with the Richfield Field Office LUPs as amended. The amendment of the House Range and Warm Springs Land Use Plans is currently blocked by a planning restriction imposed by Section 2851 of the National Defense Authorization Act of Fiscal Year 2000. Should this be resolved, the land use plans will be amended.

This EA may serve as the NEPA analysis document of record for BLM's determinations with respect to finalizing the Fire Management Plan.

TABLE 1.1: OTHER RELEVANT BLM DOCUMENTS

Land Use Plan	Year
Richfield Field Office	
Forest Management Framework Plan (MFP)*	1977
Henry Mountain MFP *	1982
Mountain Valley MFP *	1982
Parker Mountain MFP *	1982
Cedar Beaver Garfield Antimony RMP*	1984
Fillmore Field Office	
House Range RMP	1987
Warm Springs RMP	1987
*as amended by the Utah Land Use Plan Amendment for Fire and Fuels Management, 2005	

1.6 RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

This document was prepared in adherence to relevant BLM NEPA and CEQ guidance for the completion of an EA. CEQ regulations for implementing NEPA (40 CFR parts 1500-1508) detail the process of preparing NEPA documents, while the Federal Land Policy and Management Act of 1976 (FLPMA 43 USC 1711) regulates the BLM's planning process. As required by FLPMA and BLM policy, resource management planning must take into account the principles of multiple use and sustained yield.

In addition to meeting the goals, objectives and intent of BLM planning guidance, other applicable fire management goals, policy statements and specific fire management decisions addressed by the proposed action include:

- Federal Wildland Fire Management Policy (1995) and Review and Update of the Federal Wildland Fire Management Policy (2001)
- A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-year Comprehensive Strategy

In consideration of CEQ and BLM guidance and fire management requirements, the Proposed Action has been developed to also be in compliance with other applicable environmental laws, policies, and Executive Orders (EOs). These authorities include (but are not limited to) the Healthy Forests Restoration Act, Clean Air Act (CAA), Clean Water Act (CWA), Wild and Scenic Rivers Act (WSRA), Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Archaeological Resource Protection Act (ARPA), Colorado River Basin Salinity Control Act, Utah's laws for air pollution, Utah BLM's Standards and Guidelines for Healthy Rangelands, Native American Trust Resource Policies, EO 11514 (Protection and Enhancement of Environmental Quality), EO 11593 (Protection and Enhancement of the Cultural Environment), EO 11988 (Management of Floodplains), EO 11990 (Management of Riparian and Wetlands), EO 12866 (Regulatory Planning and Review), EO 12898 (Consideration of Environmental Justice Issues), EO 13112 (Management of Invasive Species), and EO 13186 (Management of Migratory Birds). Specific land management and wildland fire management policies are shown in **Appendix B**.

The Proposed Action would be consistent with adjacent federal land agency, State of Utah and affiliated Native American tribal planning. These other planning efforts include the State of Utah Natural Hazard Mitigation Plan (Utah Department of Public Safety 2004) and ongoing local government planning. If inconsistencies are identified, the BLM would consider adjustments to fire and/or fuel treatments during project-specific planning through coordination with adjacent entities. Resources managed by other federal, state, and tribal agencies were also taken into consideration during the development of resource protection measures (RPMs) within the Proposed Action.

1.7 IDENTIFICATION OF ISSUES

The proposed FMP would not be in conflict with other resource goals and objectives in the existing LUPs. However, issues have been identified for this EA that are based on potential impacts on resources within the planning area. **Appendix A** presents the issues that were identified (including those resources considered as Critical Elements of the Human Environment) through BLM and affiliated agency review. These issues influenced the development of the Proposed Action. Those resources that are either not present within the planning area or would not be affected by the Proposed Action are identified in **Appendix A** and will not be brought forward for analyses in this document. The following section is a summary of potentially affected resource issues.

Air Quality

- Potential impacts on air quality, including smoke particulates and visibility.

Areas of Critical Environmental Concern

- Impacts on the values the ACECs were created to protect (e.g., relic vegetation, wildlife, or cultural resources).

Cultural Resources

- Impacts on properties listed or eligible for listing on the National Register of Historic Places (NRHP).

Invasive, Noxious and Non-native Species

- Potential for increased infestation/introduction of invasive, noxious and non-native species following wildland fires and non-fire hazardous fuels reduction projects.

Native American Religious Concerns

- Impacts on traditional use of vegetation and cultural or religious sites.

Threatened, Endangered, or Candidate Plant Species

- Impacts on listed/candidate plant species and their habitats from wildfire and suppression

Threatened, Endangered or Candidate Animal Species

- Impacts on listed/candidate animal species and potential and historic habitat.

Water Quality

- Impacts on water quality due to unplanned actions.

Wetlands/Riparian Zones

- Impacts on riparian vegetation from heavy equipment use during wildfire suppression activities or fire control lines and fire retardant.

Wild and Scenic Rivers

- Possible degradation of outstanding remarkable values.

Wilderness/Wilderness Study Areas

- Impacts on wilderness values from heavy equipment use during wildfire suppression activities or fire control lines and fire retardant.

Livestock Grazing

- Impacts on grazing resources.

Woodland/Forestry

- Impacts on the availability of forest-related products (including posts, fuel wood, Christmas trees, nuts, etc.).

Vegetation, including Special Status Species

- Impacts on vegetation including Special status species from heavy equipment during wildfire suppression activities or fire control lines and fire retardant.

Fish and Wildlife, including Special Status Species

- Impacts on fish and wildlife including Special status species including loss/change of habitat, loss of individuals, and changes in community type.

Soils

- Impact to soils including soil nutrient cycling, alterations to the physical structure of the soil, changes in the rate of infiltration, runoff, erosion, and sedimentation.

Fire and Fuel Management

- Fire and fuel management considerations form the basis for the Proposed Action. Therefore, fire and fuel management impacts are considered and addressed in full in this EA. The objective of the Richfield FMP is to provide management direction for this resource, in consideration of other resources. As such there is no separate section in Chapters 3 and 4 for this resource.

Socioeconomics

- Impacts on socioeconomics.

Wilderness Characteristics

- Potential impacts on lands with wilderness characteristics.

1.8 SUMMARY

To meet the Purpose and Need of the proposed FMP in a manner that resolves the identified issues, the BLM has analyzed two alternatives—No Action and the Proposed Action. The Proposed Alternative, the alternatives dismissed, and the No Action Alternative are presented in Chapter 2. Potential environmental impacts or consequences resulting from the implementation of each alternative are then analyzed in Chapter 4, for each of the identified issues.

CHAPTER 2. DESCRIPTION OF ALTERNATIVES

2.1 INTRODUCTION

This chapter describes and compares the Proposed Action, the No Action Alternative, and two other alternatives considered, but not analyzed. The Proposed Action complies with Federal Wildland Fire Management Policy and BLM fire planning guidance. The No Action Alternative represents current fire management direction as directed in the Richfield District FMP (BLM 1998a). Both Alternatives prioritize protection of life and resources. However, the No Action contains less emphasis on fuels management and fewer opportunities to restore fire to ecosystems. It does not completely comply with Federal Wildland Fire Management Policy and BLM guidance.

The planning area boundaries are the same for the No Action Alternative and the Proposed Action. However, the planning area is divided into 29 FMUs in the Proposed Action and 20 fire management categories in the No Action Alternative. The boundaries of the fire management categories are similar in some instances, but not directly comparable to the boundaries of the FMUs. No Action fire management categories were developed based on fire behavior, vegetation types, and proximity to suppression resources. In the Proposed Action, FMUs are delineated based on management objectives and constraints, topographic features, access, values to be protected, political boundaries, fuel types, FRCC, and other distinguishing characteristics. Both alternatives use the following categories to define where and to what degree both planned (prescribed fire) and unplanned (wildland fire) are appropriate.

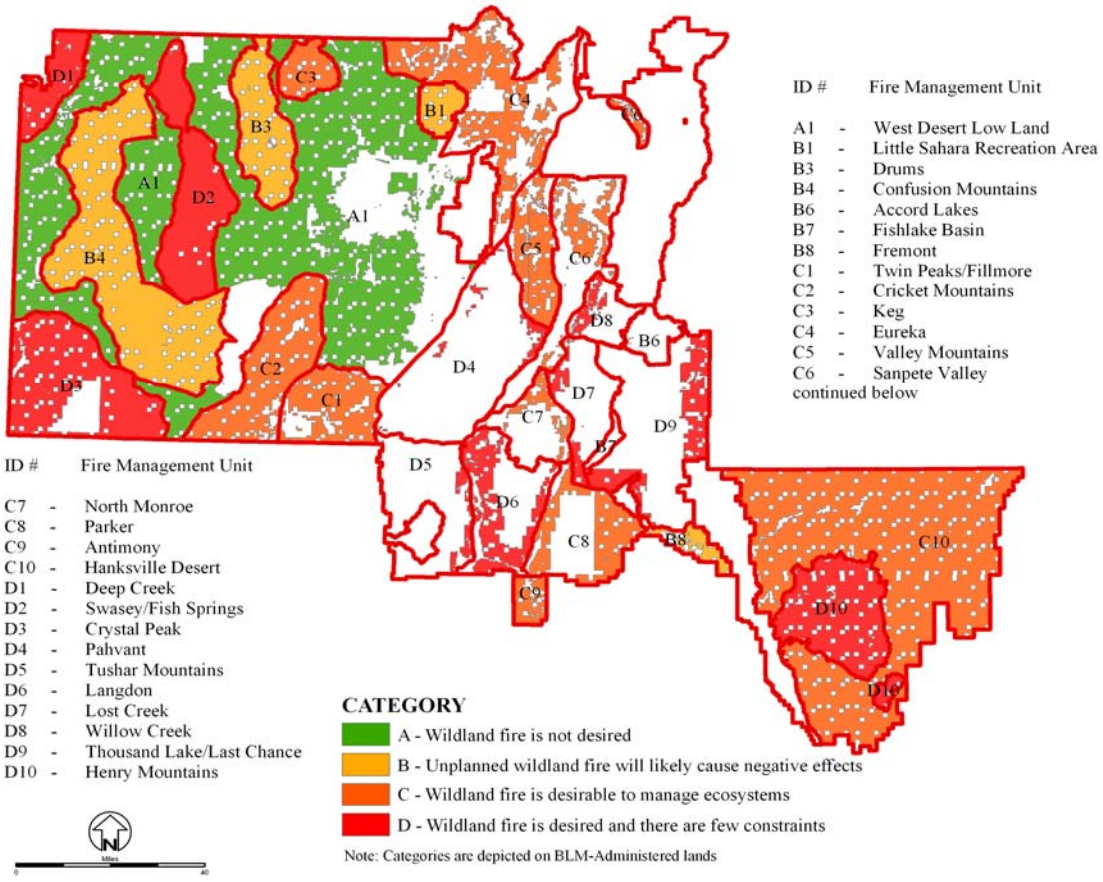
- *Category A*: Fire is not desired at all.
- *Category B*: Unplanned fire is not desired, but prescribed fire and/or non-fire fuel treatments may be used to achieve resource objectives. Mitigation would likely be required to protect resources.
- *Category C*: Fire is desired. Constraints are present to protect values at risk. Prescribed fire and non-fire fuel treatments may also be used to achieve resource objectives.
- *Category D*: Fire is desired. Wildland fire, prescribed fire, and non-fire fuel treatments may be used to achieve desired objectives.

Appendix C presents a detailed definition of the Categories. Greater detail regarding the alternatives is presented below.

2.2 PROPOSED ACTION

Twenty-nine FMUs that make up the planning area for the Proposed Action and fire management objectives for BLM-administered lands in the planning area are presented in **Figure 2.1**. Overall goals for the Proposed Action are discussed in Section 2.2.1. Fire management actions are presented in Section 2.2.2, and RPMs are discussed in Section 2.2.3.

FIGURE 2.1: FIRE MANAGEMENT UNITS WITH FIRE MANAGEMENT OBJECTIVES FOR THE PROPOSED ACTION IN THE RICHFIELD PLANNING AREA



2.2.1 OVERALL GOALS

The Proposed Action emphasizes strategic fire management planning that integrates resource management goals, objectives, and concerns with fire management activities. Broad goals as part of the Proposed Action are as follows:

- Provide for firefighter and public safety.
- Work collaboratively with communities at risk within the WUI to develop plans for risk reduction.
- Allow fire to function in its ecological role, when appropriate for the site and situation, to help protect, maintain, and enhance public resources.
- Create an integrated approach to fire and resource management across landscape and agency boundaries.
- Provide a program that fosters interagency interaction, cooperation, and effectiveness for all fire management activities.

2.2.2 FIRE MANAGEMENT ACTIONS FOR THE PROPOSED ACTION

Four fire management actions are present in the Proposed Action. The first two as described below, wildfire suppression and wildland fire use, are considered unplanned and do not undergo additional site-specific NEPA analysis due to unknown location, size, and timing of the events. They are both managed using site-specific decision documents respectively called a Wildland Fire Situation Analysis and a Wildland Fire Implementation Plan. They both require real-time interdisciplinary evaluation and analysis of fire's impacts and approval by the line manager. The last two, prescribed fire and non-fire fuel treatments, are considered planned actions and undergo site-specific NEPA review and analysis prior to implementation. Emergency Stabilization and Restoration (ESR) actions follow many wildland fires, and actions associated with ESR do undergo site-specific analysis.

Immediate actions (e.g., emergencies) surrounding wildfire suppression are exempt from CEQ's regulatory provisions for implementing NEPA (40 CFR 1506.11). In the event of such emergencies, the BLM must consult with CEQ following direction in H-1790 and USDI Departmental Manual 516 (covering NEPA procedures). The following summarizes the proposed fire management actions. **Appendix D** presents wildfire suppression, wildland fire use, prescribed fire, and non-fire fuel treatments acreage goals and objectives for each FMU.

Wildland Fire Management: Goals stated in the Proposed Action are designed to allow fire to function in its ecological role when appropriate for the site and situation, while still protecting resource values at risk. Priorities for a quick wildland fire management response include providing for public and firefighter safety, preventing wildland fires from spreading to private land, and protecting cultural resources, riparian areas or other sensitive resources, and improvements on BLM lands. For any type of response, minimizing cost must be considered. The suppression objectives outline the maximum number of acres that are allowed to burn from any one fire start. Once the decadal burn target has been reached for each vegetative type from unplanned ignitions, a review of objectives and strategies would be initiated to develop new management criteria on all wildland fires within that FMU.

Considerations for suppression objectives with target acres for FMUs are as follows:

- Fire intensity level
- Size of the public land
- Level of use by the public
- Proximity to private residences, communities, and private in-holdings
- Wilderness values
- Historic fire regimes
- Unique biological, cultural, historical, or archeological resources

Appropriate Management Response to Wildland Fires

The Appropriate Management Response (AMR) is any specific action suitable to meet Fire Management Unit (FMU) objectives. Typically, the AMR ranges across a spectrum of tactical options (from monitoring to intensive management actions). The AMR is developed by using FMU strategies and objectives identified in the Fire Management Plan.

AMR, included as part of the Proposed Action, may include one or more of the following actions:

- Monitor from a Distance: Fire situations where inactive fire behavior and low threats require only periodic monitoring from a nearby location or aircraft.

- Monitor On-site: Fire situations that require the physical placement of monitors on the fire site to track the fire's spread, intensity, and/or characteristics.
- Confinement: Actions taken when fires are not likely to have resource benefit and an analysis of strategic alternatives indicates threats from the fire do not require costly deployment of large numbers of suppression resources for mitigation or suppression. Typically these fires will have little to no on-the-ground activity and fire movement remains confined within a pre -determined area bounded by natural barriers or fuel changes.
- Monitoring plus Contingency Actions: Monitoring is carried out on fires managed for resource benefits but circumstances necessitate preparation of contingency actions to satisfy external influences and ensure adequate preparation for possible undesirable developments.
- Monitor plus Mitigation Actions: Actions on fires managed for resource benefits, that either pose real, but not necessarily immediate, threats or do not have a totally naturally defensible boundary. These fires are monitored, but operational actions are developed and implemented to delay, direct, or check fire spread, or to contain the fire to a defined area, and/or to ensure public safety (through signing, information and trail/area closures).
- Initial Attack: A planned response to a wildfire given the wildfire's potential fire behavior. The objective of initial attack is to stop the spread of the fire and put it out at least cost. This is an action where an initial response is taken to suppress wildfires consistent with firefighter and public safety and values to be protected.
- Wildfire suppression with multiple strategies: This action categorized wildfires where a combination of tactics such as direct attack, indirect attack, and confinement by natural barriers are utilized to accomplish protection objectives as directed in a Wildland Fire Situation Analysis (WFSA).
- Control and Extinguishment: These actions are taken on a wildfire when the selected WFSA alternative indicates a control strategy . Sufficient resources are assigned to achieve control of the fire with a minimum of acres burned.

After Suppression Occurs

Following wildfire suppression, areas may undergo emergency stabilization and rehabilitation (ESR) as appropriate. This activity may include obliteration of firelines, erosion control, and seeding. ESR is only implemented after a wildfire suppression event. ESR actions require additional review for NEPA compliance as they are not considered emergency actions. The Richfield Support Center completed a Normal Year Fire Rehabilitation Plan in 1998 (BLM 1998d) and will use that document to help guide future ESR projects on BLM land in Juab, Millard, Sanpete, Sevier, Piute, Wayne, and Garfield Counties.

Wildland Fire Use: The management of naturally ignited wildfires to accomplish specific pre-determined resource management goals would be determined on an occurrence-by-occurrence basis for each FMU where wildland fire use has been identified for potential use. An examination of the current fire situation, determination of probable fire cause, and estimation of the potential for fire spread would be conducted to determine the potential to accomplish resource management objectives. If a fire were determined to be suitable for management as a wildland fire use incident, the ignition would be managed in accordance with the procedures and requirements outlined in the *Wildland Fire Use Implementation Procedures Reference Guide (May 2005)*.

Prescribed Fire: Prescribed fire would be implemented to achieve DWFC objectives. Prescribed fire would be considered for an FMU if it could benefit ecosystems and minimize undesirable wildland fire effects through fuels reduction or conversion. Suitability of specific areas for introduction of prescribed fires would be determined through a NEPA review prior to implementation.

The prescribed burn season for the Richfield planning area can occur year-round. The fire management staff would initiate prescribed fire projects with input from resource specialists. Prescribed burn bosses would be required to evaluate and assess results and effectiveness of the burn.

Prescribed fire may be used for any of the following purposes:

- Hazardous fuels reduction
- Conversion of FRCC 3 lands to FRCC 2 or FRCC 1 lands
- Conversion of FRCC 2 to FRCC 1 lands
- Maintenance of FRCC 1 lands

Non-fire Fuel Treatments: Non-fire fuel treatments (mechanical, seeding, chemical, and biological) may be considered as needed by a site-specific plan. For the Richfield planning area, chemical and biological treatments are relatively uncommon, and would occur on relatively few acres in the short term.. Non-fire fuel treatments can be used for the same purposes as prescribed fire (see Prescribed Fire) and may or may not be used in conjunction with prescribed fire. Projects would be developed to achieve DWFC and to reduce invasive and noxious weed species.

Mechanical treatments include hand thinning, hand piling, Dixie harrowing, brush crunching, mowing, disking, and bullhog thinning and any new feasible methods. Seeding actions often follow wildfire suppression (these are considered ESR actions, described above), and sometimes occur together with prescribed fire and non-fire fuel treatments. Seeding actions would be implemented to stabilize soils, improve establishment of grass, forb, and shrub communities, and prevent establishment of non-native invasive and noxious species. Seeding is often used after fuels reduction treatments to ensure restoration of appropriate vegetation. Many FMUs have acreage targets for non-fire fuel treatments. While the remaining FMUs may not specifically identify target acres, future treatment plans could be prepared to implement those actions. Similar to prescribed fire, non-fire fuel treatments are considered planned actions and the suitability of specific areas for their introduction would be determined through a NEPA review prior to implementation.

2.2.3 RESOURCE PROTECTION MEASURES

The Proposed Action potentially could adversely impact other resources. To prevent this, resource protection measures have been incorporated into the Proposed Action by as presented in **Appendix E**.

2.3 NO ACTION ALTERNATIVE

The 1998 version (as amended) of Richfield District FMP comprises the No Action Alternative. The management measures included in the FMP stress wildland fire prevention and fire suppression and have some prescribed fire.

Figure 2.2 illustrates the general areas associated with fire management policy in the Richfield planning area for the No Action Alternative.

Although the No Action Alternative has some of the same criteria as the Proposed Action—protection of life,and protection of resources—it does not provide direction for wildland fire use to restore ecosystems or for non-fire fuel treatments as called for by the National Fire Plan and Healthy Forests Restoration Act. In addition, this existing plan does not incorporate the latest policy guidance, particularly related to FRCC, nor does it have protection measures for special designation or WUI areas. The existing FMP allows fire to play a role in the ecosystem only on a small scale. Continuation of the existing direction would be out of compliance with federal regulations because the plan does not conform to current policies and guidelines.

Further, following the current FMP wouldn't allow the planning area to continue trends away from meeting DWFC, and contribute to more intense and severe wildfires.

The goals, objectives, and target acres for fire management direction in the No Action Alternative are summarized in **Table 2.1** as a comparison with the Proposed Action**.** The No Action Alternative was written in a different format and with different organization of content than the Proposed Action, so direct comparisons are not possible. For example, the No Action Alternative has 20 fire management categories focusing on risk of fire; the Proposed Action has 29 FMUs and focuses on DWFC. However, where planning area wide elements are common to both alternatives, such as the role and applicability of wildland fire in consideration of other resources, as well as other fire and non-fire fuel treatment methods are evident, they are compared.

TABLE 2.1: PROPOSED ACTION VS. NO ACTION ALTERNATIVE GOALS AND OBJECTIVES FOR RICHFIELD PLANNING AREA

	Proposed Action (also refer to Appendix D)	No Action Alternative
Goals and Objectives	▪ Provide for firefighter and public safety. ▪ Work collaboratively with communities at risk within the wildland urban interface (WUI) to develop plans for risk reduction. ▪ Allow fire to function in its ecological role when appropriate for the site and situation to help protect, maintain, and enhance public resources. ▪ Create an integrated approach to fire and resource management across the landscape and agency boundaries. This approach would be designed to meet the desired outcomes of land and resource management plans. ▪ Provide a program that fosters interagency interaction, cooperation, and effectiveness for all fire management activities.	▪ Public and firefighter safety ▪ Fire would play a role in the ecological process ▪ Fire planning would be an integral part of resource management ▪ Sound risk management ▪ Economic viability ▪ Interagency cooperation
Organization of Alternatives	Planning area is divided into 29 fire management units (FMUs). FMUs are based on management objectives and constraints, topographic features, access, values to be protected, political boundaries, fuel types, fire regime and condition class, and other distinguishing characteristics. Each FMU has been divided into one of the following four categories. Amount of total acres in the planning area for each category is indicated in parenthesis. ▪ *Category A*: Fire is not desired at all. (1,825,630 acres) ▪ *Category B*: Unplanned fire is not desired but prescribed fire and/or non-fire fuel treatments may be used to achieve resource objectives. (935,611 acres) ▪ *Category C*: Fire is desired. Constraints are identified on a case-by-case basis, and mitigation efforts are directed towards reducing the impact on values at risk. Prescribed fire and non-fire fuel treatments may also be used to achieve resource objectives. (2,314,171 acres) ▪ *Category D*: Fire is desired. Wildland fire, prescribed fire, and non-fire fuel treatments may be used to	Planning area is divided into 20 fire management categories. Fire management categories are based on fire behavior, vegetation types, and proximity to suppression resources. Units have specific objectives and suppression constraints. Each fire management category has been divided into one of the following four categories. Amount of total acres in the planning area for each category is indicated in parenthesis. ▪ *Category A*: Fire is not desired at all. (3,414,751 acres) ▪ *Category B*: Unplanned fire is not desired but prescribed fire and/or non-fire fuel treatments may be used to achieve resource objectives. (2,397,350 acres) ▪ *Category C*: Fire is desired. Constraints are identified on a case-by-case basis, and mitigation efforts are directed towards reducing the impact on values at risk. Prescribed fire and non-fire fuel treatments may also be used to achieve resource objectives. (395,727 acres) ▪ *Category D*: Fire is desired. Wildland fire, prescribed fire, and non-fire fuel treatments may be used to

	Proposed Action (also refer to Appendix D)	No Action Alternative
	achieve desired objectives. (1,376,439 acres)	achieve desired objectives. (no acres)
Wildfire suppression	Contain fire per ignition at this acreage or less: Range for FIL 4-6: 1,500-5,000 acres Range for FIL 1-3: 500-4,000 acres	Wildland fire acreage limits were consistently set per fire occurrence. Often there were annual burn limits and infrequently 10-year acreage limits.
Wildland Fire Use	300,968 acres available	None specified.
Prescribed Fire (Annual Allowance)	88,000 acres per year have been identified for potential prescribed fire treatments.	Acreage totals for three different categories: ▪ Prescribed fire: 14,450 ▪ An additional 10,000 acres can be treated with fire, mechanical methods, or a combination of the two.
Non-fire Treatment (Annual Allowance)	87,000 acres per year have been identified for potential non-fire treatments. Mechanical treatments would represent the majority of a maximum of 87,000 acres planned for treatment each year.	Acreage totals for three different categories: ▪ Mechanical treatments: 9,550 acres ▪ An additional 10,000 acres can be treated with fire, mechanical methods, or a combination of the two.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

Two additional fire management alternatives—the Historical Fire Alternative and the Non-Fire Treatment Alternative—were considered, but eliminated from formal analysis because they either did not meet policy guidelines or they were not ecologically or fiscally practical. The two dismissed alternatives are described below.

2.4.1 HISTORICAL FIRE ALTERNATIVE

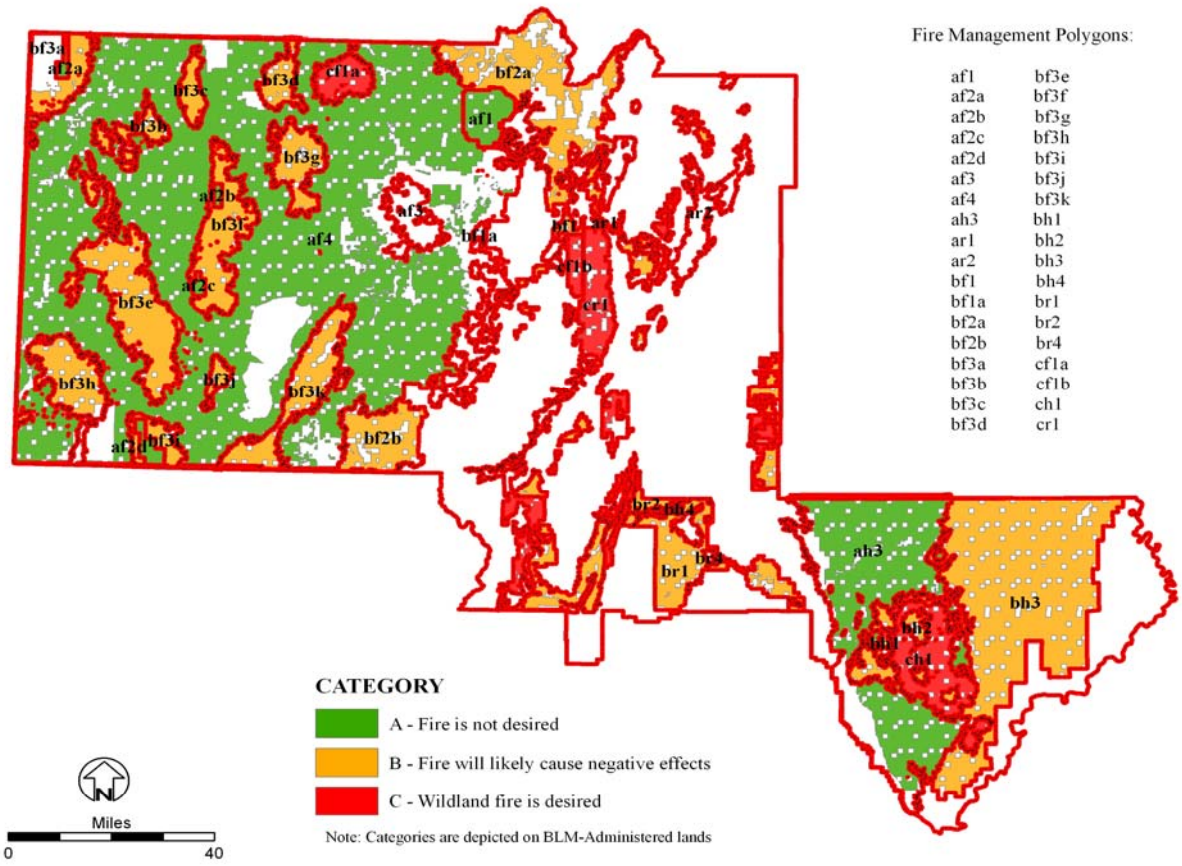
An additional fire management alternative was considered, but eliminated from formal analysis because it would not be ecologically or fiscally feasible. This alternative could be considered the Historical Fire Alternative because it sets treatment targets that mimic acres historically burned, while considering the restoration of natural fire regimes. These acres were determined from simple vegetation and fire return interval analysis. The primary differences between this alternative and the Proposed Action, is the differences in treatment acres and differences in treatment types to achieve DWFC; this alternative would include larger treatment acres and treatments would be limited to fire treatments. Because the BLM manages scattered parcels, allowing fires to burn at this acreage in many areas would increase risk to private and state lands.

The basis on which this alternative was developed—restoration of natural fire regime—fails in that natural conditions no longer occur as a result of past management practices coupled with ecosystem alterations resulting from pre-European settlement. While it is known that there have been significant vegetation alterations since historical times, the extent or severity of most of these alterations remains uncertain. As a result of ecosystem change, passive restoration techniques, such as restoring naturally occurring fires to the land, would not have the same benefit to ecosystems as in the past. For example, invasive species concerns affect large portions of Utah. Without active restoration techniques, such as seeding, fires burning in these areas dramatically increase the risk of establishment of these invasive species. Establishment of these invasive species often results in the permanent loss of historical ecosystem components. Additionally, this alternative is unlikely to be funded to the extent necessary. Despite increases in fire management funding over the past five years, current and expected budgets for implementing fire management actions do not provide the necessary resources for accomplishing the identified treatment acres.

2.4.2 NON-FIRE TREATMENT ALTERNATIVE

Another alternative considered would have prioritized non-fire fuel treatments above other types of treatments. However, this alternative did not meet the Purpose and Need of this EA and was therefore dropped from further analysis because it would not restore fire as an ecological process. Federal wildland fire policy directs that fire be restored as a natural part of the ecosystem.

FIGURE 2.2: FIRE MANAGEMENT OBJECTIVES FOR THE NO ACTION ALTERNATIVE IN THE RICHFIELD PLANNING AREA



CHAPTER 3. AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter includes a description of the environment and resources that have potential to be affected by the alternatives described in Chapter 2. Environmental resource baseline information is presented herein for comparing potential impacts from the Proposed Action and No Action Alternatives, which are analyzed in Chapter 4. Environmental information on general effects fire has on resources, not solely attributable to management actions, is located in **Appendix F**.

Identified resources carried forward for analysis in this planning effort and those dismissed from further analysis, are addressed in **Appendix A**. The following resources were determined through the foregoing procedures to not be affected by the Proposed Action and No Action Alternatives: environmental justice, farmlands (prime or unique), floodplains, wastes (hazardous or solid), rangeland health standards and guidelines, recreation, visual resource management, geology, mineral resources, paleontology, lands and access and wild horses and burros. (See **Appendix A** for discussion of reasons for inclusion or dismissal of resources for analysis.) No further analysis of these resources will be included in this EA. Those resources areas determined to potentially be affected by the Proposed Action and No Action Alternatives are described in Section 3.3, below.

3.2 GENERAL SETTING

The Richfield FMP area is located within portions of the Basin and Range and Colorado Plateau physiographic provinces of the western United States. Elevations in the planning area range from 4,500 to over 11,800 feet above mean sea level. Most of the planning area is located between 4,500 to 8,000 feet above sea level.

Climatic zones throughout the region can be classified under four climate types - desert, steppe, humid continental, and undifferentiated highlands. Each has distinct weather patterns, temperatures, and precipitation patterns (Pope and Brough 1996). Elevation, topography, location with respect to storm paths over the region and proximity to mountain ranges help create the varied climate types (Garwood 1996). Precipitation varies from an average of less than 10 inches per year to more than 35 inches per year.

The planning area is comprised of approximately 6.6 million acres of BLM-administered lands (**Appendix D**). This represents approximately 12 percent of all lands in Utah and 29 percent of BLM-administered land in Utah.

3.3 CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT AND OTHER RESOURCES BROUGHT FORWARD FOR ANALYSIS

3.3.1 AIR QUALITY

An activity that impacts air quality also has the potential to affect the air quality of the airshed where the activity is conducted and to impact other airsheds. "Airshed" is defined as a geographic area, usually with distinct topographic features such as a valley, associated with a given air supply. Six airsheds have been identified within the Richfield planning area (including Utah Airshed 16, which is located at elevations above 6,500 feet above sea level throughout the state). In many cases, airsheds are included in adjacent planning areas and states.

In accordance with EPA air quality permitting system directives (EPA 1992), the area of consideration for air quality impacts includes airsheds over lands within the planning area as well as lands within a 100-kilometer radius of the planning area. **Figure 3.1** presents a map of the planning area and identifies areas sensitive to air quality located within the area of consideration.

Air Quality Standards

Air quality within the planning area is governed by federal laws, which EPA has given Utah the authority to administer. The framework for the Utah air quality program is based on the federal Clean Air Act (CAA) of 1970, as amended. Air quality within Utah is regulated by the Utah Division of Air Quality (UDAQ) within the Utah Department of Environmental Quality (UDEQ). Administrative rules governing air quality are found in the Utah Administrative Code R307, including emissions standards for general burning (R307-202), smoke management (R307-204), fugitive emissions, and fugitive dust (R307-205).

National Ambient Air Quality Standards (NAAQs) are defined in the CAA as levels of pollutants high enough to have detrimental effects on human health and welfare. The EPA established NAAQs for six criteria pollutants—carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), lead (Pb), sulfur dioxide (SO2), and categories of particulate matter; fine particulates with an aerodynamic diameter of 10 micrometers or less (PM10); and fine particulates with an aerodynamic diameter of 2.5 micrometers or less (PM2.5). Particulate emissions are the primary NAAQS concern with respect to fire and wildfire suppression activities. When an area exceeds an ambient air quality standard, it may be designated as a non-attainment area (NAA). It is possible for a geographic area to be an attainment area for one criteria pollutant and a NAA for another.

Another provision of the CAA is the Prevention of Significant Deterioration. There are different permissible increments for criteria pollutant emissions for different areas (termed "Classes"). Class I areas are the most protected and have the least allowable degradation of air quality. In addition, the Regional Haze Rule (1999), calls for states to establish goals and emission reduction strategies for improving visibility in all mandatory Class I area national parks and wilderness areas. The Regional Haze State Implementation Plan (SIP) has been adopted to comply with the Rule.

In cooperation with other federal land managers, states, and tribes, the EPA issued the Interim Air Quality Policy on Wildland and Prescribed Fires (April 1998). One of the goals of the policy is to allow fire to function as a disturbance process on federally managed wildlands while protecting public health and welfare. The National Wildfire Coordination Group (NWCG) has also published additional guidance for air quality management related to fire in the *Smoke Management Guide for Prescribed and Wildland Fire* (NWCG 2001).

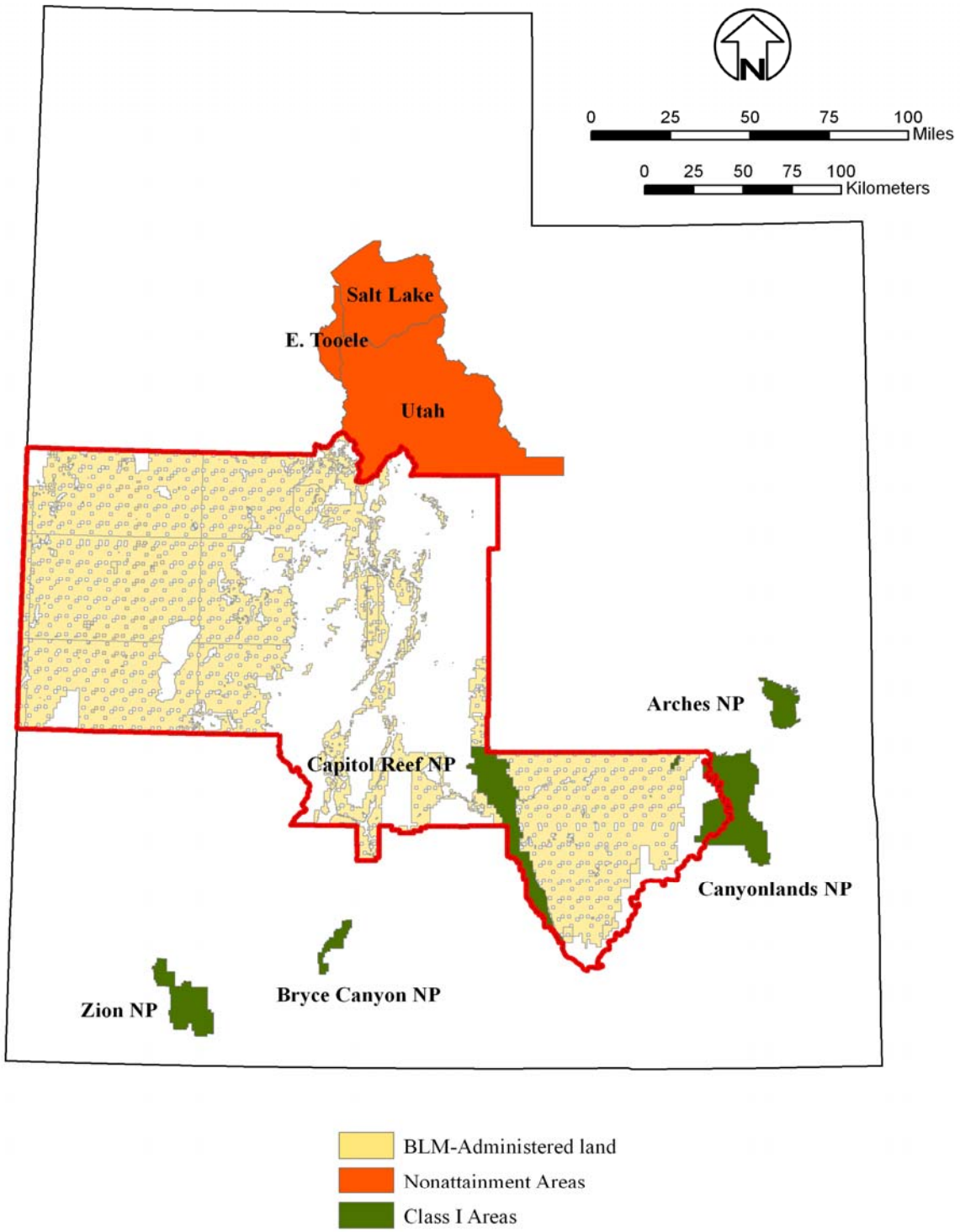
Any smoke emissions resulting from prescribed burning or wildland fire use are conducted and managed in compliance with guidelines found in the Utah Smoke Management Plan (SMP) and interagency group program. Active group participants include various federal and state agency land managers, as well as the UDAQ. The purpose of this program and the SMP is to ensure that measures are taken to reduce the impacts on public health, safety, and visibility from wildland fire, wildland fire use, and prescribed fire.

Compliance with the SMP is the primary mechanism for land managers to implement wildland fire use and prescribed burns while ensuring compliance with the CAA. Burn plans written under this program include actions to minimize fire emissions, exposure reduction procedures, a smoke dispersion evaluation, and a smoke monitoring plan. Proposed burns are reviewed on a daily basis by the program coordinator, and burns are approved or denied based on current climatic and air quality conditions.

Air Quality Class I Areas

There are two mandatory Class I visibility areas, completely or partially contained within the Richfield planning area (EPA 2002): Capitol Reef National Park and Canyonlands National Park. There are also three Class I areas (Bryce Canyon National Park, Zion National Park, and Arches National Park) located within the 100-kilometer area of consideration (Figure 3.1).

FIGURE 3.1: NON-ATTAINMENT AREAS AND CLASS I AREAS WITHIN A 100-KILOMETER RADIUS OF THE RICHFIELD PLANNING AREA



Sensitive Areas

Other areas that have been identified as sensitive to air quality include NAAs, hospitals, airports, major transportation corridors, and population centers.

No NAAs have been designated with the planning area; however five NAAs have been designated within the 100-kilometer radius area of consideration of the planning area (**Figure 3.1**) and are listed (with their associated NAAQS criteria) below:

- Salt Lake County - PM_{10}, SO_2
- Utah County - PM_{10}
- East Tooele County - SO_2
- Provo/Orem - CO

Several major transportation corridors run through the planning area and the area of consideration. They include U.S. Interstate 15, U.S. Interstate 70, Highway 50, Highway 6, and Highway 257, as well as numerous county roads.

Numerous airports are located throughout the Richfield planning area and surrounding area of consideration, including 11 airports registered with the Federal Aviation Administration (Delta, Fillmore, Glen Canyon National Recreation Area, Hanksville, Junction, Loa, Manti, Mount Pleasant, Nephi, Richfield, and Salina). There are also numerous hospitals and medical centers, generally located in larger population centers.

3.3.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

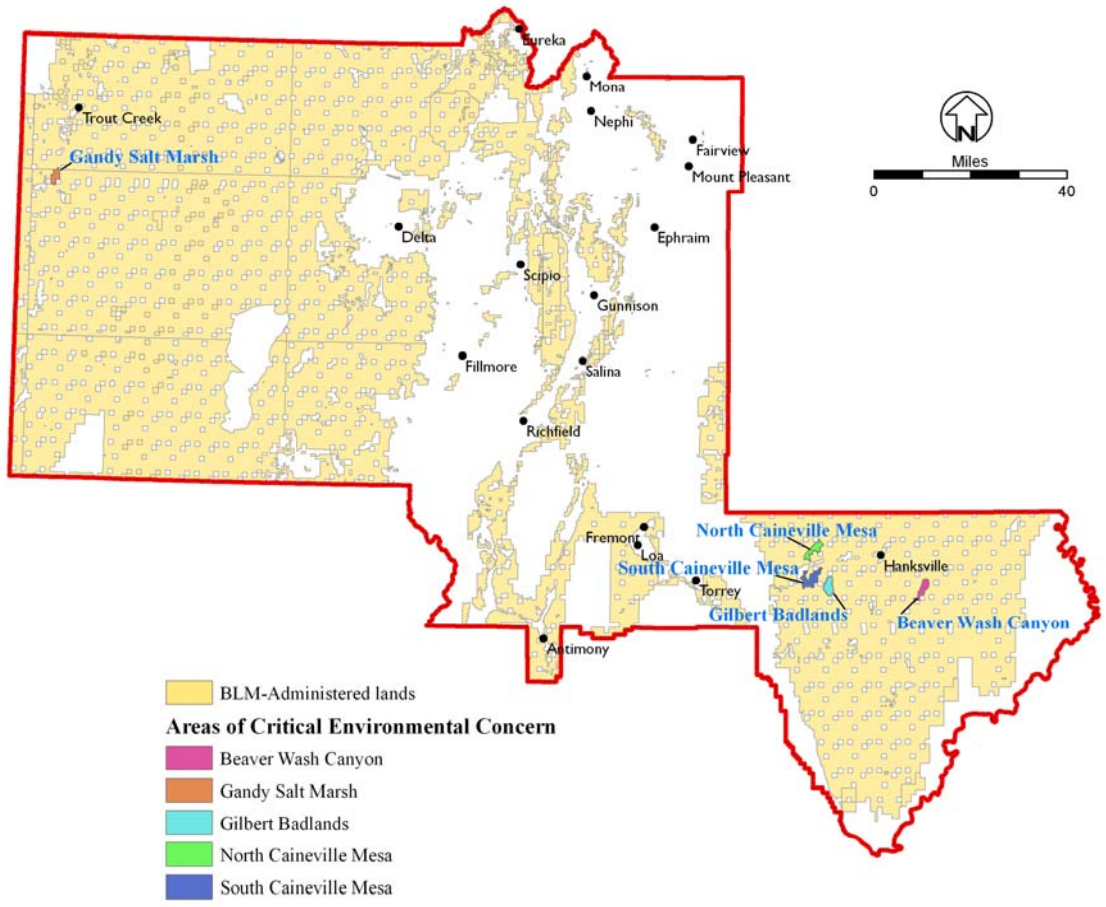
The designation of ACECs is authorized in FLPMA. An ACEC is an area where "special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources or other natural systems or processes; or to protect life and safety from natural hazards."

Figure 3.2 identifies the five ACECs within the planning area. **Table 3.1** lists ACECs totaling approximately 19,070 acres located on BLM-administered lands within the planning area.

TABLE 3.1: AREAS OF CRITICAL ENVIRONMENTAL CONCERN IN RICHFIELD PLANNING AREA

Areas of Critical Environmental Concern	Acreage	Relevant and Important Values
Richfield Field Office		
Beaver Wash Canyon	3,439	Fish and wildlife, botanical, riparian
Gilbert Badlands	3,742	Geological
North Caineville Mesa	3,846	Botanical, scenic
South Caineville Mesa	5,346	Botanical
Fillmore Field Office		
Gandy Salt Marsh	2,696	Biological, riparian, threatened and endangered species
TOTAL	19,070	

FIGURE 3.2: AREAS OF CRITICAL ENVIRONMENTAL CONCERN IN THE RICHFIELD PLANNING AREA



3.3.3 CULTURAL RESOURCES

Cultural resources include prehistoric or historic (older than 50 years of age) locations where human habitation or use has occurred. These include archaeological, historic, and architectural sites that are important for scientific research or for public display through preservation and interpretative efforts. Such resources include traditional cultural properties (TCPs) and religious sites important to Native American and other cultural groups. A number of legislative acts and EOs provide procedures and guidelines for federal agencies that determine effects of their projects on cultural resources, including, but not limited to, the NHPA, as amended; American Religious Freedom Act; Archaeological Resources Protection Act; and EO 13007 (Indian Sacred Sites).

Section 106 of the NHPA and its implementing regulations (36 CFR 800) require federal agencies to take into account the effects of their undertakings on historic properties. According to these regulations, a historic property is defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places..." (36 CFR 800.14). This definition also encompasses artifacts, records, and remains related to such properties. Compliance with Section 106 of the NHPA would be completed on a project-specific basis before decisions are made to carry out fire management activities, such as prescribed burns, non-fire fuel treatments and ESR actions, which could affect cultural resources.

The following provides a general overview of the wide range of prehistoric, historic, and traditional cultural/religious sites that occur on BLM-managed land throughout Utah.

Lands administered by the BLM in the planning area currently include 24 NRHP listings, listed below. It is important to note that such locations represent known sites only and may not represent all sites, given that cultural resource surveys have been completed on relatively small portions of the planning area.

- Pharo Village - 42Md180
- Paleo-Indian (Folsum) Camp Site - 42Md300
- Gooseberry Archaeological District - 42Sv633
- Horseshoe Canyon Pictograph Panel
- Cowboy Caves - 42Wn420
- Bull Creek Archaeological District
- Fremont Field Camp - 42Pi159
- Gunnison Massacre Site
- Robber's Roost
- Black Rock Station Petroglyphs Sites
- Cottonwood Wash - 42Md183
- Deseret - 42Md55
- Mountain Home Wash - 42Md53
- Desert Archaic Site - 42Md284
- Elijah Cutler Behunin Cabin - UT 24
- Cathedral Valley Corral Structure
- Civilian Conservation Corps Powder Magazine
- Hanks' Dugouts
- Morrell, Lesley, Line Cabin and Corral
- Oyler Mine
- Pioneer Register
- East and West Tintic Historic Mining Districts
- Desert Experimental Station
- Topaz War Relocation Center Site

Prehistoric Resources

Thousands of archaeological sites representing more than 13,000 years of human occupation have been recorded on BLM-managed land in the planning area. Prehistoric sites are usually concentrated near seeps and springs in desert mountain ranges, along perennial mountain streams, and along rivers. They include properties as diverse as a Paleo-Indian camp site, Archaic seasonal sites and the later Formative Fremont (Pharo Village), and Anasazi sites. Prehistoric Numic as well as historic Paiute sites can been found in this area. These sites consist of seasonal camps, habitation sites, antelope traps, rock art, and one known prehistoric burial. The planning area is noted for its early Fremont sites and numerous rock art panels and sites as well as its transition into Anasazi territory.

Historic Resources

Historic resources in the Richfield planning area include ghost towns, historic ranches, cemeteries, burial locations, mining districts, logging sites, and historic trails and wagon trails, such as the Pony Express National Historic Trail with its associated sites and markers. There are many resources pertaining to mining in the Richfield planning area, including the East and West Tintic Historic Mining Districts.

Many resources, such as the National Register-listed Desert Experimental Station and sites associated with Butch Cassidy, are considered historically interesting and significant. During the 1930s, the Civilian Conservation Corps completed hundreds of projects in the planning area, including road construction, trail improvements, and campground development. A WWII Internment Camp was constructed near Delta to house Japanese-Americans. During its existence, Topaz was the fifth largest community in Utah. Historic resources are spread throughout the planning area. Some types of historic sites (small dump sites and roads) are quite common and are generally concentrated near communities.

3.3.4 INVASIVE, NOXIOUS AND NON-NATIVE PLANTS

Invasive and non-native species are an increasing problem on BLM-administered lands. These plants were introduced either accidentally (such as cheatgrass in contaminated crop seed or livestock forage) or intentionally (such as streambank stabilization). These invasive and non-native species have spread mainly through cross-country travel (e.g., off-highway vehicle [OHV] use), hiking and camping activities, movement of wildlife and livestock, and road construction. They readily establish in highly disturbed areas, particularly burned areas. There has been increased infestation that resulted from fire suppression activities. The spread of invasive non-native species poses a hazard to vegetation communities on BLM lands because they are aggressive, broadly adaptive, and lack the natural predators found in their native habitat. They can also displace native plants as they compete for space, sunlight, water, and nutrients. These invasive non-natives can cause drastic changes in the composition, structure, and productivity of vegetation communities.

In the Richfield planning area, cheatgrass is the primary management issue in the salt desert shrub, sagebrush, and pinyon and juniper woodlands vegetation types. Non-native invasives such as cheatgrass can alter fire regimes and cause fire re-occurrence to increase when they out-compete more fire-resistant native vegetation. They also provide flammable fuels between the interspaces among shrubs that allow fire to carry in an unnatural manner (McAuliffe 1995; Brown 2000).

Cheatgrass

Introduced from Eurasia in the late 1800s, cheatgrass is an opportunistic winter annual that filled the void left vacant by the reduction of herbaceous vegetation by livestock grazing at the turn of the century (Pellant 2002). It germinates between autumn and spring when temperatures and soil moisture are suitable. Cheatgrass, as a winter annual, can begin growth in early spring and does not have to wait for temperatures to warm. Cheatgrass utilizes all the available moisture as it actively grows. Other reasons for its success are that its seed never goes dormant; it produces a large number of seeds per plant that remain viable for several years; and because of its long awns, it is fairly resistant to grazing. Cheatgrass may be present in relatively undisturbed plant communities, but usually becomes dominant on disturbed sites (Fielding and Brusven 2000). Although it does occur, cheatgrass has been less successful in dominating sites that are above 7,000 feet because there is more soil moisture available to native perennial grasses.

This process of shrub loss and conversion to annual grasslands is a key management problem that affects nearly every use of public rangelands. The lack of shrub cover makes for poor-quality wildlife habitat, so annual grasslands have diminished plant and animal diversity. Cheatgrass is also inferior livestock forage.

The criteria for establishing when cheatgrass becomes an invasive concern or a fire concern is not readily assigned. Limbach (2002) has offered unofficial guidance of five percent cover as an invasive concern and 15 to 20 percent cover as a fire and fuels concern (both percentages relative to associated understory species). Degraded sites are most susceptible to annual grass invasion after fire. An abundance of cheatgrass in the understory enhances the likelihood of fire spread and conversion of sagebrush steppe or salt desert shrub to annual grassland (Howard 1999). Cheatgrass poses a serious fire hazard.

Knapweed and other known noxious and invasive plant species

There are several species of knapweed (*Centaurea spp)*, however the four that are a serious problem in Utah are: squarrose knapweed (*C. squarrosa*), Russian knapweed (*C. repens)*, diffuse knapweed (*C. diffusa*), and spotted knapweed (*C. maculosa*). All four are classified as shade intolerant and readily establish in burned areas, which have been opened up to sunlight. All produce prolific seed and spread rapidly (squarrose knapweed was detected in Utah in 1954 and is now estimated to infest 140,000 acres in 1996 [BLM 1998b]). There is evidence some (if not all) have alleopathic characteristics, i.e., they release chemicals that inhibit the growth of surrounding vegetation (Whitson et al. 1991), reducing competition. This results in an altered soil chemistry, which may further exacerbate the problem of returning native species to the site. All four are listed as official noxious weeds of Utah, with the sap of spotted and Russian knapweeds known to be carcinogenic to humans.

Like cheatgrass, it is expected that knapweed, and other known noxious and invasive populations would continue to increase and that desirable native communities would decrease due to disturbance. Because they are found in the 8- to 12-inch precipitation zone, this infestation would likely occur in the grassland, sagebrush, and pinyon and juniper woodlands.

3.3.5 NATIVE AMERICAN RELIGIOUS CONCERNS

The Utah BLM is in the process of consulting with 23 Tribal groups who have expressed an interest in places of traditional religious or cultural importance located on all or part of BLM-managed lands within the State of Utah. This consultation is being carried out to provide an opportunity for tribes to identify places of traditional religious or cultural importance (TCP). Many Native American belief systems require that the identity and location of traditional religious and cultural properties not be divulged. BLM has a commitment to keep specific information regarding such resources confidential to the fullest extent allowed by law.

Places of traditional cultural importance provide a sense of spiritual and social continuity. Some places may have religious significance. At others, observance of traditional ceremonial activities, or hunting and gathering plants for food or medicinal use may occur. Within the context of the NHPA, a TCP is a property that may be eligible for inclusion on the NRHP due to its association with the cultural practices or beliefs of a living community. It should be noted that eligibility is also dependent upon these practices or beliefs having been passed down through the generations, and that they are important in maintaining the cultural identity and integrity of that group. Because they are not usually recognizable to an outsider through archeological or historical investigations, the existence and locations of Native American TCPs may often only be identified through consultation with Native American Tribes.

3.3.6 SPECIAL STATUS SPECIES

For purposes of this EA, special status species were divided into two types: ESA-related species and BLM sensitive species.

ESA-related species include those listed as endangered and threatened under the ESA of 1973, as amended, one of which has designated critical habitat, as well as candidate and species (**Appendix G**). Threatened and endangered (T&E) species are under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Candidate and petitioned species are not under the jurisdiction of the USFWS; however, because they are given recognition as candidates or species petitioned for federal listing, they are discussed under the ESA-related heading.

BLM sensitive species include certain plant species, some of which may be managed through conservation agreements in which BLM participates (**Appendix H**).

These two types of special status species are described further below. In addition, a discussion regarding habitat for these species is presented.

ESA-related Species

These federally listed species are listed in **Appendix G**, along with their scientific name, federal status, associated vegetation community / habitat type, and field office(s) having jurisdiction over potentially suitable habitat.

Designated critical habitat and proposed critical habitat on BLM-administered lands in Utah are presented in **Table 3.2**. The proposed designation is found in southern Washington County, outside of the Richfield planning area. It should be noted that the California condor exists as a non-essential, experimental population [ESA, Section 10(j)] with documented records of occurrence within the Richfield planning area.

TABLE 3.2: FEDERALLY LISTED SPECIES AND THEIR PROPOSED OR DESIGNATED CRITICAL HABITAT

Species	Critical Habitat	General Location
Southwestern willow flycatcher	Proposed	Southern Washington County
Mexican spotted owl	Designated	Southern and eastern Utah in nine counties
Humpback chub	Designated	Eastern Utah in seven counties
Bonytail chub	Designated	Eastern Utah
Colorado pikeminnow	Designated	Eastern Utah in seven counties
Razorback sucker	Designated	Eastern Utah

BLM Sensitive Species

These species are listed in **Appendix H**, along with their scientific name, federal status, associated vegetation community / habitat type, and BLM field office(s) having jurisdiction over potentially suitable habitat.

Species Habitat

Gap Analysis Program (GAP)

GAP is a scientific method for identifying the degree to which natural communities are represented. Vegetation is mapped from satellite imagery and other records using the National Vegetation Classification System.

Habitats associated with each special status species, and the distribution of such habitats, are widely variable. Some species are found throughout the Richfield planning area while others are endemic to a single location. As noted above, the Utah Gap Analysis Program (GAP) (see sidebar) was used to identify vegetative cover types pertaining to this project. GAP provides an indicator of vegetation coverage and habitat types at the large-scale, but is not particularly accurate on- the- ground for site-specific projects. Consequently, it is possible that the expanse (acreage or boundary) of a cover type could be inaccurate and that cover types and species associated with these cover types may not actually be present at the project-specific level.

Vegetation cover types identified within the Richfield planning area include salt desert shrub, pinyon and juniper woodland, sagebrush, grassland, mountain shrub and oak, mixed conifer, and aspen. These vegetation cover types, and their distribution on BLM-administered lands throughout the planning area, are described in the vegetation section of this chapter. Wetlands and riparian zones are described in Section 3.3.8 of this chapter. Water also provides valuable habitat and has the potential to be impacted by the proposed project.

Table 3.3 lists the special status species (split into ESA-related and BLM sensitive species) generally associated with each of the vegetation types or habitat types within the Richfield planning area. Special status plant species are not necessarily associated with vegetation community types, but are more closely associated with substrate type. Therefore, plant species listed in the vegetation and habitat associations below do not infer an actual association, but rather indicate the community surrounding each plant species.

TABLE 3.3: VEGETATION TYPES AND ASSOCIATED ESA-RELATED AND BLM SENSITIVE SPECIES

Vegetation Type	ESA-related Species	BLM Sensitive Species
Salt Desert Shrub	San Raphael cactus, Barneby reed-mustard, Wright fishhook cactus, Winkler cactus, last chance townsendia, Mussentuchit gilia, California condor.	Current milk-vetch, dunes four-wing saltbush, mound cryptanth, Creutzfeldt-flower, small spring parsley, Big Flattop buckwheat, Ibex buckwheat, Utah spurge, Cataract gilia, Neese narrowleaf penstemon, Utah phacelia, Jones' globemallow, Jane's globemallow, psoralea globemallow, White River swertia, Sevier townsendia, spotted bat, fringed myotis, kit fox.
Pinyon and Juniper Woodland	Maguire daisy, last chance townsendia, Rabbit Valley gilia, Mussentuchit gilia, California condor, Mexican spotted owl.	Basalt milk-vetch, dunes four-wing saltbush, Ownbey thistle, small spring parsley, pinnate spring parsley, Nevada willowherb, Ibex buckwheat, Claron pepperplant, Neese narrowleaf penstemon, psoralea globemallow, Bicknell thelesperma, Sevier townsendia, Frisco clover, Lewis's woodpecker, fringed myotis, Eureka mountainsnail.
Sagebrush	Wright fishhook cactus, bald eagle, Mexican spotted owl, Utah prairie dog, pygmy rabbit.	Ownbey thistle, small spring parsley, four-petal jamesia, Claron pepperplant, Neese narrowleaf penstemon, Sevier townsendia, ferruginous hawk, greater sage grouse, dark kangaroo mouse, Eureka mountainsnail.

Vegetation Type	ESA-related Species	BLM Sensitive Species
Grassland	Wright fishhook cactus, Mussentuchit gilia, Utah prairie dog.	Big Flattop buckwheat, Jones' globemallow, grasshopper sparrow, short-eared owl, burrowing owl, ferruginous hawk, long-billed curlew, Eureka mountainsnail.
Mountain Shrub and Oak	Maguire daisy, Rabbit Valley gilia, Mussentuchit gilia.	Pinnate spring parsley, Nevada willowherb, Deep Creek stickseed, Pine Valley goldenbush, four-petal jamesia, House Range primrose, Bicknell thelesperma, black swift, Lewis's woodpecker, Townsend's big-eared bat, spotted bat, Allen's big-eared bat, big free-tailed bat, Eureka mountainsnail.
Mixed Conifer	Bald eagle, Canada lynx.	Deep Creek stickseed, Pine Valley goldenbush, Cottam cinquefoil, Bicknell thelesperma, northern goshawk, black swift, Lewis's woodpecker, three-toed woodpecker, Townsend's big-eared bat, spotted bat, Allen's big-eared bat, fringed myotis, big free-tailed bat, Eureka mountainsnail, boreal toad.
Ponderosa Pine	Maguire daisy.	Basalt milk-vetch, pinnate spring parsley, Pine Valley goldenbush, Claron pepperplant, Lewis's woodpecker, spotted bat, Allen's big-eared bat.
Aspen	None.	Pine Valley goldenbush, black swift, three-toed woodpecker, Eureka mountainsnail.
Riparian/Wetland	Ute ladies'-tresses, southwestern willow flycatcher, bald eagle, Mexican spotted owl, western yellow-billed cuckoo.	Ownbey thistle, Greenwood's goldenbush, northern goshawk, black swift, bobolink, Lewis's woodpecker, American white pelican, cloaked physa, Utah physa, longitudinal gland pyrg, bifid duct pyrg, sub-globose snake pyrg, southern Bonneville pyrg, California floater, boreal toad.
Water	Humpback chub, bonytail, Colorado pikeminnow, razorback sucker.	Bonneville cutthroat trout, Colorado River cutthroat trout, least chub, leatherside chub, roundtail chub, bluehead sucker, flannelmouth sucker.

3.3.7 WATER QUALITY

Watersheds, aquifers, rivers, and streams are ecologically dynamic interfaces of atmosphere, soils, and water. Healthy watersheds capture precipitation and runoff, store water in the soil (or bedrock) profile, and release it slowly back into the landscape surface waters. Most of the water supply to the watersheds within the Richfield planning area comes from snowmelt during the spring and early summer months and precipitation from high-intensity convective storms throughout the spring, summer, and fall. There are also many ephemeral drainages present throughout the watersheds within the planning area that flow intermittently during the year.

The discussion regarding water quality has been divided into characterizations of surface water and groundwater resources within the planning area.

Surface Water

The major watershed management units identified in the planning area includes portions of the Colorado Rivers West, Sevier River, Cedar/Beaver River, Jordan River, and Great Salt Lake/Columbia River units (UDEQ 2005a). Major river and watersheds systems located in the planning area include the Colorado, Dirty Devil, Fremont, Sevier, San Pitch, and Beaver Rivers. Surface water within the planning area is used for domestic, recreational, aesthetic, agricultural, stock-watering, and industrial purposes. They also are habitat for aquatic and water-oriented wildlife and fish.

The federal Water Pollution Control Act of 1972 and the Clean Water Act (CWA) of 1977 and subsequent amendments or revisions are the predominant federal legislation that directs management of water quality on BLM-administered lands. The CWA mandates restoration and/or maintenance of the chemical, physical, and biological integrity of our nation's waters, and dictates further compliance with state and local water quality standards.

Under Section 303(d) of the CWA, the UDEQ is directed to list all waters that do not meet water quality standards or have impaired beneficial uses (e.g., drinking water, recreation, etc.). Waterbodies in which water quality is impaired are referred to as "303(d)-listed streams" or "impaired waters." The sources of these impairments come predominantly from agriculture (e.g., grazing, irrigation), natural sources (e.g., bedrock), on-the-ground hydrological modification (e.g., resource extraction and road construction), and point-source discharges. When a stream is listed as impaired, the allowable total maximum daily load (TMDL) of a pollutant, such as total dissolved solids, must be calculated. TMDLs apply to both point and non-point sources. The UDEQ is in the process of developing TMDLs for waterbodies throughout Utah.

UDEQ has identified 14 waterbodies within the planning area as 303(d)-listed streams, totaling approximately 265 miles of streams, rivers, reservoirs or lakes (UDEQ 2004) (**Figure 3.3**). TMDL determinations have been completed for 303(d)-listed sections of the Middle and Lower Sevier River (pending) and the Fremont River watershed (UDEQ 2005b).

No watersheds in the planning area contain protected surface water sources used for municipal water supply. The Cold Springs underground water source (spring) supplies drinking water for Monroe City, and the Twelve Mile Springs source supplies drinking water to the Twelve Mile Flat U.S. Forest Service campground in Sanpete County (UDEQ 2005c). The effects of fire management actions are not likely to impact these water sources due to the protected (underground) nature of the water sources.

Groundwater

The primary groundwater recharge areas in Utah generally occur along mountain fronts where basin-fill materials erode from mountain bedrock (Baskin et al. 2002). Groundwater accumulates in these areas and moves down-gradient, usually toward the valley bottoms. Further away from the mountain fronts, groundwater discharge areas occur where groundwater collects (e.g., to form playas) or enters surface water bodies.

Groundwater recharge areas could be particularly vulnerable to surface sources of pollution because the primary recharge areas may not have protective, fine-grained layers (such as typically found in basin valleys) that serve to filter out the pollutants as the fluids move downward.

Groundwater is part of the developed water supply for numerous municipalities in the Richfield planning area and supplies private water wells used for drinking water and irrigation.

3.3.8 WETLANDS AND RIPARIAN ZONES

A riparian area is generally defined as the area alongside a perennial or ephemeral stream that is influenced by the presence of shallow groundwater. The U.S. Army Corps of Engineers (Federal Register 1982) and the U.S. Environmental Protection Agency (EPA) (Federal Register 1980) jointly define wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and which, under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. BLM Manual 1737 (BLM 1992), *Riparian-Wetland Area Management*, includes marshes, shallow swamps, lakeshores, bogs, muskegs, wet meadows, estuaries, and riparian areas as wetlands.

Riparian-wetland areas are either classified as functioning properly or not. If a riparian-wetland area is not in Proper Functioning Condition (PFC), BLM (1999b, Revised 2003) places the area into one of three categories:

- *Functional-at-Risk*: Riparian-wetland areas that are in functional condition but have an existing soil, water, or vegetation attribute that makes them susceptible to degradation.
- *Non-Functional*: Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or woody debris to dissipate energies associated with flow events, and thus are not reducing erosion, improving water quality, etc.
- *Unknown*: Riparian-wetland areas for which there is a lack of sufficient information to make any form of determination. (BLM 2003b)

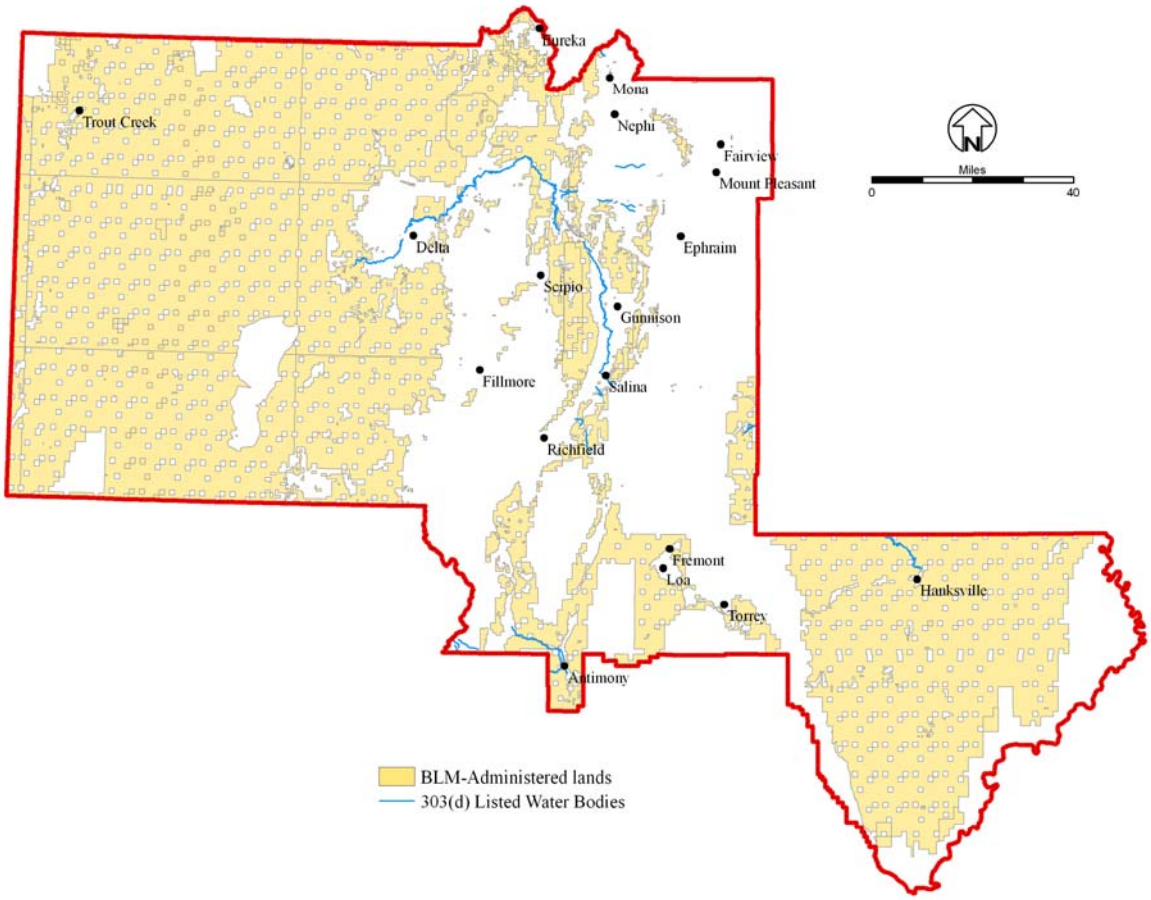
Within the Richfield planning area, the following riparian or wetland areas have been identified in the existing LUPs as exhibiting important values. The current PFC status of these areas remains unknown as data collection is currently ongoing.

- Bishop Springs
- Dirty Devil River
- East Fork
- Fish Springs
- Fremont River
- Grandy Saltmarsh
- Pine Creek
- Pruess Lake
- Sevier River
- Skootumpah Reservoir
- Tule Valley springs
- Numerous lakes, streams and springs
- Deep Creek
- Deer Creek

The functioning condition and the natural processes that affect functionality of wetlands and riparian areas have been impaired at many locations through human disturbances and alterations and infestation of non-native plant species. Humans have altered stream aquatic and riparian environments by direct modifications (channelization, wood removal, diversion, dam-building, irrigation de-watering) and indirect impacts (from timber harvest, mining, grazing, and road building). These activities have altered channels by changing the rate at which sediment, water, and wood enter and are moved through streams. Anthropogenic activities have also affected the incidence, frequency, and magnitude of the natural disturbance events described above (McIntosh et al. 1991; Wissmar et al. 1994).

Invasive species such as tamarisk, tall whitetop, giant reedgrass and Russian olive have become well established in the riparian communities and are slowly replacing the native vegetation across much of Utah. This increase in tamarisk/Russian olive within this community type has altered the intensity and size of unplanned fires due to the increased fuel loads within the cottonwood understory, providing ladder fuels to the large cottonwood trees. The re-sprouting ability of these invasive species gives them a long-term ecological edge over the cottonwoods in regard to fire.

FIGURE 3.3: 303(D)-LISTED STREAMS IN THE RICHFIELD PLANNING AREA



3.3.9 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act (16 USC 1271-1287) established a National Wild and Scenic Rivers System and prescribed methods and standards through which additional rivers may be identified and added to the system. The purpose of the Wild and Scenic Rivers System is to preserve the free-flowing state of rivers that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Rivers in the system are classified as wild river areas, scenic river area, or recreational river areas. WSRA established a method for providing federal protection of our country's remaining free-flowing rivers, preserving them and their immediate environments for the use and enjoyment of present and future generations (NPS and USDA 1982). It also established management requirements to protect both the suitable river or river segments and the land immediately surrounding them.

No rivers in Utah are included in the National Wild and Scenic Rivers System. However, Section 5(d)(1) of WSRA directs federal agencies to consider potential Wild and Scenic Rivers in their land and water planning processes and to determine their suitability for inclusion in the System. WSRA provides that suitable rivers or river segments be administered in such a way as to protect and enhance the values that made them eligible for the national system, but not to limit other uses that do not substantially interfere with public use and enjoyment of these values (Interagency Wild and Scenic Rivers Coordinating Council 2004).

Inventories in the Richfield Field Office (BLM 2004c) have identified rivers or river segments as eligible for designation (**Table 3.4**). There are no eligible rivers under the Fillmore Field Office jurisdiction (Bonar 2005). A river area is eligible to be included in the system if it is a free-flowing stream and the related adjacent land area possesses one or more outstandingly remarkable value.

Protective management is in place until the eligible river or river segment is determined, during the study phase, to be suitable or unsuitable. Similarly, suitable segments are managed to protect the free flow, outstandingly remarkable values (ORVs), and recommended classification until Congressional action regarding designation is taken.

Suitability determination involves an evaluation of whether Wild and Scenic River designation would be an appropriate element of long-term management of the river or, in other words, whether designation makes sense for the river in question. Suitability determinations would occur within the Record of Decision of the Richfield Field Office RMP.

TABLE 3.4: RIVERS AND RIVER SEGMENTS ELIGIBLE FOR WILD AND SCENIC RIVERS

River or River Segment	Outstandingly Remarkable Values	Tentative Classification	BLM Miles
Richfield Field Office			
Dirty Devil Complex			
Dirty Devil River	Scenic, recreation, geologic, fish and wildlife	Wild	54
Beaver Wash Canyon	Scenic and ecological	Wild	6.8
Happy Canyon	Scenic and recreation	Wild	5.6
Larry Canyon	Scenic, recreation, wildlife, and ecological	Wild	4
No Mans Canyon	Scenic and recreation	Wild	7.1
Robbers Roost Canyon	Scenic, recreation, and historic	Wild	25.9
Sams Mesa Box Canyon	Scenic and wildlife	Wild	9.5
Twin Corral Box	Scenic and wildlife	Wild	9

River or River Segment	Outstandingly Remarkable Values	Tentative Classification	BLM Miles
Richfield Field Office			
Fremont River			
Fremont Gorge	Scenic and fish and wildlife	Wild	5
Horseshoe Canyon	Scenic and geologic	Wild	23.4
Maidenwater Creek	Scenic, recreation, geologic, fish and wildlife, and ecological	Scenic	3
Pine Creek	Fish and wildlife and ecological	Scenic	1.2

3.3.10 WILDERNESS STUDY AREAS

Wilderness areas can only be designated by Congress, and are managed under the Wilderness Act. A Wilderness Study Area (WSA) is an administrative designation designed to allow areas to be studied and considered by Congress for possible designation as wilderness.

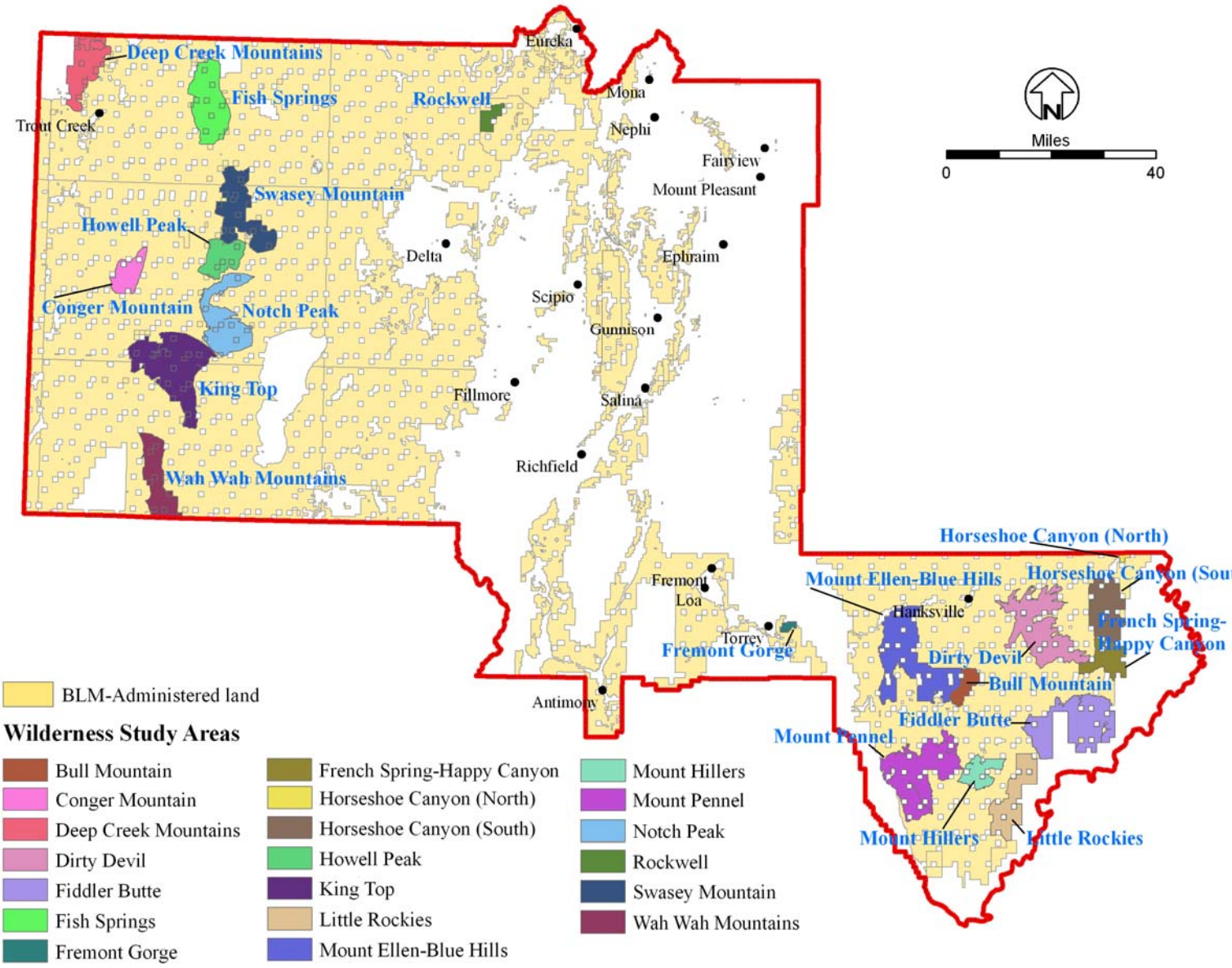
Section 603 of FLPMA requires the BLM to protect the wilderness character of each WSA until Congress makes its decision, regardless of its recommendation. WSAs are managed to prevent impairment of their suitability for congressional designation as wilderness. There are no wilderness areas in the Richfield planning area, only WSAs.

Approximately 855,639 acres have been designated for WSAs within the planning area. These areas are identified in **Figure 3.4**. **Table 3.5** lists and identifies the size of each of the WSAs.

TABLE 3.5: WILDERNESS STUDY AREAS ON BLM-ADMINISTERED LANDS

Name	Acres
Bull Mountain	13,138
Conger Mountain	20,161
Deep Creek Mountains	44,347
Dirty Devil	71,881
Fiddler Butte	73,359
Fish Springs	57,608
Fremont Gorge	2,843
French Spring-Happy Canyon	24,305
Horseshoe Canyon (North)	2,043
Horseshoe Canyon (South)	39,842
Howell Peak	27,545
King Top	92,846
Little Rockies	40,733
Mount Ellen-Blue Hills	81,361
Mount Hillers	19,277
Mount Pennel	77,136
Notch Peak	57,295
Rockwell	9,342
Swasey Mountain	58,475
Wah Wah Mountains	42,104
TOTAL	**855,639**

FIGURE 3.4: WILDERNESS STUDY AREAS IN THE RICHFIELD PLANNING AREA



3.3.11 LIVESTOCK GRAZING

Livestock grazing is permitted on approximately 61 percent of BLM-administered lands in the Richfield planning area. For administrative purposes, the Richfield planning area is divided into 442 allotments. **Figure 3.5** presents the location of livestock grazing allotments in the planning area. In the Richfield Field Office there are 141 allotments and 194 permittees utilizing 110,000 AUMs per year. . In theFillmore Field Office there are 181 allotments and 264 permittees utilizing 263,690 AUMs per year.

Grazing allotments are geographically unique and range in size from 385,673 public acres to small isolated parcels of public land of less than three acres. Sizing affects how the allotments are managed. Allotments with large blocks of contiguous BLM land are minimally impacted by surrounding private land. The isolated tracts are often a small component of a larger private land holding. Administrative access to these small tracts of public land sometimes exists only because of the grazing permit or lease. Allotments may be joined with private, state, other federal lands or a combination thereof, in addition to BLM-administered lands. Allotments may be permitted to one (individual allotment) or more (common allotment) operators. More than one permit may be issued to a particular individual or company. Grazing use by livestock is measured in terms of animal unit months (AUMs). One AUM is equal to the amount of forage used to support one cow and calf for one month (approximately 800 pounds of forage). Grazing permits convey no right, title, or interest in the public lands and their resources.

Grazing Systems

Seasons of use vary on each allotment throughout the Richfield planning area from a few-week season to a year-long season. Each allotment may have a number of pastures that are grazed in a rotation system. A deferred rotation grazing system rotates livestock use (e.g., livestock start and end in different pastures each year) through several pastures. A rest-rotation grazing system includes a full year or more of rest for one or more pastures within the allotment. Each grazing system may include periodic rest depending upon the specific management concerns and needs for that allotment. The season of use for each allotment is described in the operator's grazing permit. Season-long use entails grazing one pasture from spring or early summer to late summer or fall. Some movement of livestock use may occur within the pasture (e.g., from canyon to canyon). Deferred rotation is a technique that uses the entire allotment by rotating pasture use (e.g., livestock start in a different pasture each year). Rest-rotation of pastures is a technique that involves grazing during certain periods and resting during other periods, with some pastures rested for the entire grazing season. Grazing systems are designed based on the requirements of key forage species in the allotment, the resources of concern on the allotment and the needs of the livestock producer and their livestock. These periods of use are referred to as treatments and are rotated so that no pasture receives the same use every year.

3.3.12 WOODLANDS AND FORESTRY

Most existing wood product use in the Richfield planning area is for firewood, Christmas trees, and pine nut gathering, with a minor component being for lumber and associated products. **Table 3.6** shows the occurrence of forested types approximate acres for the planning area, and primary uses of the forests. As shown in **Table 3.6**, the predominant forest type in the planning area is the pinyon and juniper woodland category. This is the most extensive forest type in Utah, exceeding in acreage all other forests combined (Lanner 1984). Efforts have been made to encourage non-commercial thinning of pinyon and juniper woodland for firewood use. There are less than 1000 individual use permits issued per year. Limited commercial pine nut gathering occurs in the Fillmore Field Office. The mixed conifer is comprised of fir, pine, and spruce species, some areas have aspen as well.

FIGURE 3.5: LIVESTOCK GRAZING ALLOTMENTS IN THE RICHFIELD PLANNING AREA

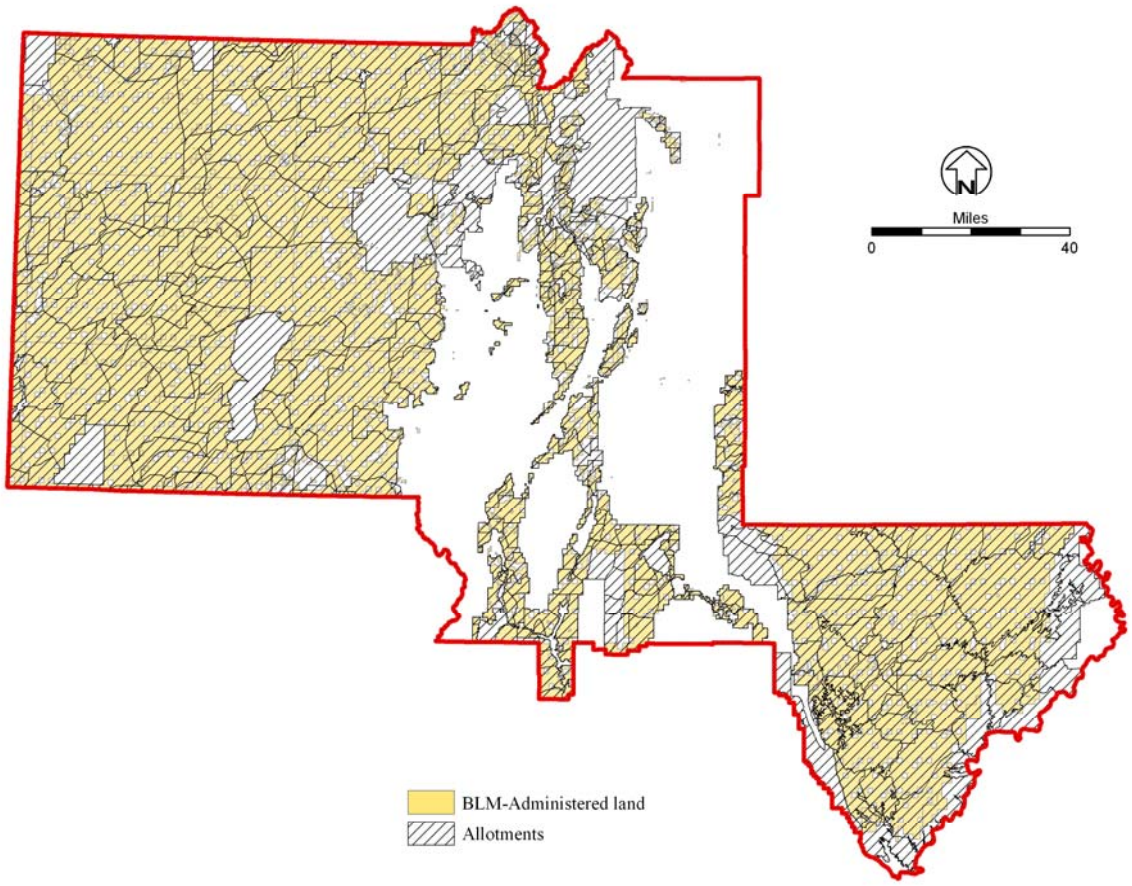


TABLE 3.6: FOREST TYPES, ACRES, AND PRIMARY USES IN RICHFIELD PLANNING AREA

Vegetation Type	Approximate Acres in Planning Area	Uses
Mixed Conifer/Aspen	44,886	Mixed conifer used for firewood, Christmas trees, pulp, lumber, log home construction, and fence posts. Aspen used for packing material (dunnage), pallets, erosion blanket, swamp cooler filters, matches, specialty lumber, fuelwood, fence posts, and pulp.
Pinyon and Juniper Woodland	1,108,507	Firewood, specialty lumber, pine nuts, biomass
Ponderosa Pine	42,351	Lumber, fuelwood, log home construction, and fence posts

Old-growth forests are generally defined as being older than 250 years old. The primary forest type identified within the planning area as likely to have old-growth areas is the pinyon and juniper woodlands. Harvesting or other activities affecting old-growth forests are generally restricted.

3.3.13 VEGETATION

Fire Regime Condition Class

Fire Regime Condition Class (FRCC) is an interagency, standardized tool for determining the degree of departure from historical vegetation, fuels, and disturbance regimes. Assessing FRCC can help guide management objectives and set priorities for treatments. FRCC was assigned to vegetation on public lands within the state through review of vegetation types identified by GAP (Edwards et. al. 1998), and elevation ranges. The definitions for FRCC are presented in **Table 3.7**.

TABLE 3.7: FIRE REGIME CONDITION CLASS DESCRIPTIONS

Fire Regime Condition Class	Description
1	Within the natural (historical) range of variability of vegetation characteristics; fuels composition; fire frequency, severity and pattern, and other associated disturbances.
2	Moderate departure from the natural (historical) range of variability of vegetation characteristics; fuels composition; fire frequency, severity and pattern, and other associated disturbances.
3	High departure from the natural (historical) range of variability of vegetation characteristics; fuels composition; fire frequency, severity and pattern, and other associated disturbances.

Vegetation in the Richfield planning area is grouped into vegetation types with similar fire ecology. **Table 3.8** presents vegetation types, extent, and the percent coverage of BLM-administered lands in the Richfield planning area. **Figure 3.6** illustrates the distribution of the various vegetation types identified within the planning area.

Salt Desert Shrub

This vegetation type is perhaps the most arid vegetation type in the Intermountain West (Wood and Brotherson 1986) occurring in valleys at the lowest elevation. This vegetation type grows in areas characterized by accumulations of salt in poorly developed soils. This vegetation type includes salt-tolerant, succulent shrubs like greasewood, ephedra, shadscale, four-wing saltbush, and threadleaf rubber rabbitbrush. Common grasses include inland saltgrass, alkali sacaton, bottlebrush squirreltail, and Indian ricegrass. Forbs are numerous but seldom are any one species abundant. Biological crusts are usually present and cover most

of the interspaces between shrubs in intact, native species-dominated salt-desert shrub types. Salt desert shrub generally has low productivity, naturally sparse understory vegetation, and light fuels.

In the past 40 years, large expanses of salt desert shrub have been overtaken by invasive annual grasses and annual forbs. Currently, cheatgrass has invaded all of the salt desert type found on the Richfield planning area and virtually all of this vegetation type now provides sufficient fuel loading to support large, fast-moving fires. Where cheatgrass has invaded, native salt desert shrub communities have been permanently lost or are at high risk of loss. Salt desert shrub vegetation is mostly considered to be in FRCC 3 due to the high potential for non-native species establishment.

Sagebrush

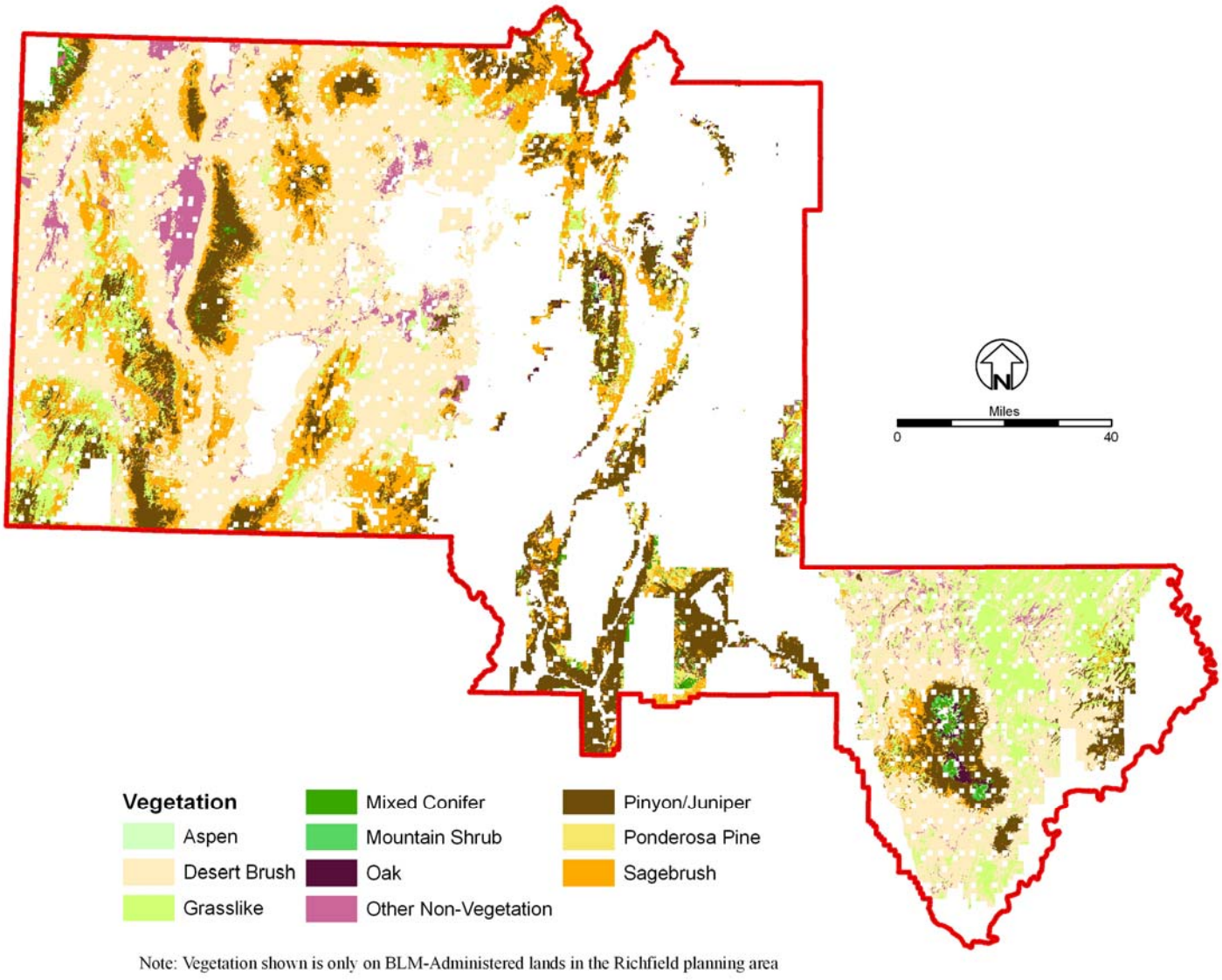
Unlike the salt desert shrub type, which grows as mixed stands in poor soils, big sagebrush grows in non-saline, well-drained valleys and slopes and mostly forms monotypic stands. It is generally found above the valley bottoms, immediately below the pinyon and juniper woodland type. However, in western Utah, there are two zones of big sagebrush that dominate a wide belt both below and above the pinyon and juniper woodland.

Since sagebrush develops in seral stages, many of the acres of native, perennial grasslands and areas shown in **Table 3.8** may be considered early seral sagebrush communities. In addition, at the scale of mapping for this EA, many areas identified as annual and perennial grasslands may contain inclusions of remnant sagebrush steppe communities.

TABLE 3.8: VEGETATION TYPE ACRES IN RICHFIELD PLANNING AREA

Vegetation Type	BLM Acres (approx.)	Fire Regime	Fire Regime Condition Class (FRCC)
Salt Desert Shrub	3,040,819	V	3 (100%)
Sagebrush	1,112,101	II	3 (100%)
Pinyon and Juniper Woodland	1,108,904	II or V (old growth)	2 (22%) 3 (78%)
Grassland	837,180	I	1 (1%) 2 (31%) 3 (72%)
Ponderosa Pine	42,357	I	3 (100%)
Mountain Shrub	14,650	I, II, and IV	2 (100%)
Oak	25,731	I, II, and IV	2 (100%)
Mixed Conifer	36,472	III and IV	2 (100%)
Aspen	8,326	III and IV	3 (100%)

FIGURE 3.6: VEGETATION TYPES ON BLM-ADMINISTERED LANDS IN THE RICHFIELD PLANNING AREA



Note: Vegetation shown is only on BLM-Administered lands in the Richfield planning area

Healthy sagebrush is a patchwork mosaic of seral communities that range from recovering perennial grass-shrublands following natural fire to old-growth, decadent sagebrush steppe with high canopy cover and reduced herbaceous understory (Wyoming Interagency Vegetation Committee 2002). The three main subspecies of big sagebrush (*Artemisia tridentata*) found on the Richfield planning area are as follows:

1. Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) is the most common shrub in the intermountain basins (Knight 1994). It grows in pinyon and juniper woodlands and below on plains and foothills at elevations of 5,000 feet to 7,000 feet. Associated grasses are often scarce in this big sagebrush type.
2. Basin big sagebrush (*Artemisia tridentata tridentata*) grows with Wyoming big sagebrush but is confined to valley bottoms in deep, well-drained sandy to loamy soils at 4,000 feet to 7,300 feet in elevation. Basin big sagebrush grows taller (up to six feet) and blooms later than Wyoming big sagebrush.
3. Mountain sagebrush (*Artemisia tridentata vaseyana*). This subspecies grows within upland and mountain climatic regimes in the precipitation zones generally over 18 inches annually, with cooler soils and more resilient, intact native communities with abundant mountain shrubs and bunchgrasses. They are more susceptible to juniper encroachment mainly as a result of wildfire suppression. Depending on the soil type and depth, a variety of perennial grasses and forbs may dominate the understory.

On the drier sites, much of the sagebrush communities have degraded with extensive conversion to cheatgrass-dominated understories.

During pre-settlement times, it is estimated that sagebrush steppe dominated as much as 25 percent of the land now administered by Utah BLM (Limbach 2004). Management actions, cheatgrass invasion and juniper encroachment, and drought are responsible for its decreased range. The sagebrush in the planning area are considered to be in FRCC 3 due to the high potential for non-native species establishment and encroaching pinyon-juniper woodlands.

Pinyon and Juniper Woodlands

Pinyon and juniper trees that are less than 33 feet in height characterize this vegetation type. The open conifer woodlands form savannah-like landscapes with moderately open to very open canopies (25 to 59 percent canopy cover). The overstory includes pinyon pine (*Pinus edulis*) and Utah juniper as a common associate. Typically, the understory consists of shrub species like big sagebrush and native bunchgrasses like bluebunch wheatgrass (*Agropyron spicatum*). Closed woodlands (greater than 60 percent canopy cover) are dominated by the same overstory species; however, due to competition for sunlight, water, and nutrients, the understory is drastically reduced. In addition, juniper litter may further inhibit understory growth.

On lower edges of the woodland zone, Utah juniper is frequently the only tree species with a mixture of the two in the middle and pinyon with little or no juniper in the upper elevations. Utah juniper is more xeric than pinyon, often serving as nurse trees for pinyon in well-developed forests. Pinyon and juniper woodland occurs at an elevation that varies from 5,000 to 8,000 feet. This is between the lower elevation, more xeric, cool desert shrub community and the higher elevation, more mesic, mountain brush community (Welsh et al. 1993). Cold temperature of long durations seems to be the determining factor at the upper end where these communities show a strong affinity for warmer temperatures.

Junipers are considered late seral species for a number of pinyon and juniper woodland, sagebrush steppe, and shrub steppe habitats (sagebrush improves soil fertility and creates a microclimate underneath that favors the establishment of young juniper trees). An increase in sagebrush cover due to fire exclusion and following livestock grazing has created a more favorable environment for juniper invasion (Knight 1994). Consequently, Utah juniper increases with grazing and wildfire suppression and has spread from thin substrates along ridges and mountain slopes to deeper valley soils. Many areas where juniper encroachment has occurred have also

been invaded by cheatgrass in the understory, which raises concerns of further cheatgrass expansion following fire. Most of the pinyon-juniper woodlands in the planning area are in FRCC 3 due to over-abundance of trees, lack of native understory and potential for non-native species establishment following disturbance.

Grasslands

Grasslands types include native perennial grasslands, seedings of native species and exotic perennial grasses (primarily crested wheatgrass), and some cheatgrass.

Native perennial grasslands are an intermediate successional stage that would eventually return to a diverse sagebrush steppe habitat after extended periods (20 to 70 years) without impacts from wildland fires. Native perennial grass species include bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, Sandberg bluegrass, Nevada bluegrass, thickspike wheatgrass, western wheatgrass, galleta grass, blue grama, needle-and-thread grass, great basin wildrye, sheep fescue and others.

Due to increased fire intervals and subsequent loss of topsoil, perennial grasslands dominated by crested wheatgrass and/or other non-native species are stable communities that do not trend toward recovery to sagebrush steppe habitat as quickly as native perennial grasslands. Historically, native perennial grasslands would have formed part of the seral mosaic of the sagebrush steppe habitat, although it is unclear how widespread they once may have been represented across the landscape. In addition to cheatgrass, the grassland vegetation type is prone to invasives like knapweed.

Large amounts of perennial grasslands are now dominated by sagebrush as a result from wildland fire exclusion and historical livestock overgrazing practices, putting them in FRCC 3.

Ponderosa Pine

Ponderosa pine occupies the warmest, driest forest sites away from cold air drainages. Because ponderosa pine tolerates a broader range of environmental conditions than most of its associates, this type has no particular community type, and the understory constitutes whatever community is growing nearby. It can occur as a climax type at lower elevations or seral with some other type like Douglas-fir at higher elevations. It is strongly fire adapted to frequent low intensity, low severity fire in the planning area.

Mountain Shrub

This vegetation type consists of three main vegetation types: Bigtooth maple, mountain mahogany, and mixed mountain shrub. Mixed mountain shrub is a highly diverse community made up in part of chokecherry, serviceberry, currant, snowberry, elderberry, bitterbrush, mountain big sagebrush, nine-bark, ceanothus, and others. This vegetation type occurs as a transition vegetation type between mid-elevation sagebrush and conifer types. It is found at moderately high elevations (7,000 to 8,500 feet). The mountain shrub type is usually found on north and east slopes that tend to be cooler and moister than south and west aspects (the exceptions are mountain mahogany and oak, which can occur on south aspects).

Oak

The oak type is a deciduous shrubland in the Richfield planning area, at elevations between 5,500 and 7,800 feet. Gambel oak (*Quercus gambelii)* and/or bigtooth maple (*Acer grandidentatum)* are often dominant, codominant, or long-term seral dominants. Primary associated shrub species include maple and sagebrush (*Artemisa spp*.). Primary associated tree species include juniper (*juniper spp*.), pinyon (*Pinus spp*.), ponderosa pine (*Pinus ponderosa)*, aspen (*Populus tremuloides),* and mountain mahogany (*Cercocarpus ledifolious)* (Edwards et al. 1995).

Mixed Conifer

This vegetation type consists of major forest community types of mixed conifer, which may include Douglas-fir, white fir, Engelmann spruce and subalpine fir. This type occupies less than one percent of the BLM-managed lands on the Richfield planning area. Fire exclusion and over grazing have caused species like Douglas-fir to invade lower communities, otherwise most occur at elevations above 7,000 feet.

Because there are numerous community types associated with this vegetation type, the condition and trends vary. In those conifer types associated with aspen, the trend is towards a greater representation of late seral vegetation, with a corresponding loss of an early seral stage such as aspen.

In other conifer community types that lack the aspen component, the increasing density of shade-tolerant species can place greater stress on larger, older trees, mostly due to between-tree competition for water, consequently resulting in a greater susceptibility to insect and disease attack (Keyes et al. 2003). In many sites, the stocking index is 15 times greater than pre-settlement times (Baker 2001), increasing the likelihood of uncharacteristically large, stand-replacing fire.

Aspen

Aspen-dominated types can be climax or seral to conifer communities and are found at elevations between 6,500 and 10,500 feet. Aspen occurring as pure stands are considered climax and, when in association with various conifers such as Engelmann spruce, ponderosa pine, white fir, sub-alpine fir, and Douglas-fir, seral. Although conifer invasion is a natural pattern in seral aspen stands, wildland fire exclusion has resulted in an increased representation and dominance by conifer in aspen stands, thus reducing the extent of aspen-dominated stands (Mueggler 1989). Aspen is a fire-dependent species, and because aspen is a fast-growing and short-lived species, in the absence of fire the aboveground stems tend to become decadent and diseased.

3.3.14 FISH AND WILDLIFE

For the purposes of this EA, general fisheries and wildlife refers to species and groups that do not have federal status (as defined in the BLM 6840 Manual, including ESA-related species), but may have other federal and/or state protection (e.g., under the federal Migratory Bird Treaty Act or Utah State Code) and are of concern to management authorities, Native American tribes, the general public, or groups (e.g., birders, hunters, etc.) with particular interest in a species or group of species.

General fisheries and wildlife groups considered in this document include fisheries, non-game (raptors, migratory birds, small mammals, carnivores and predators, and amphibians and reptiles), and big game (mule deer, Rocky Mountain elk, desert bighorn sheep, Rocky Mountain bighorn sheep, pronghorn, and bison). ESA-related and BLM sensitive species are discussed separately. Scientific names and habitat associations for each of the species within the Richfield planning area mentioned in this section are presented in **Table 3.9**. The water cover type is valuable wildlife habitat and has the potential to be impacted by the proposed project, so it has also been included.

TABLE 3.9: HABITAT ASSOCIATIONS FOR GENERAL FISH AND WILDLIFE SPECIES

Common Name	Species	Habitat
Fisheries		
Rainbow trout	*Oncorhyncus mykiss*	W
Brown trout	*Salmo trutta*	W
Brook trout	*Salvelinus fontinalis*	W

Common Name	Species	Habitat
Lake trout	*Salvelinus namaycush*	W
Birds		
Ferruginous hawk	*Buteo regalis*	SDS, S, PJ, S, GG
Red-tailed hawk	*Buteo jamaicensis*	SDS, PJ, S, G, MS, MC, A
Northern goshawk	*Accipiter gentiles*	MC, A
Golden eagle	*Aquila chrysaetos*	SDS, PJ, G, MS, MC, RW, A, W
American kestrel	*Falco sparverius*	MC, PP, RW, A
Osprey	*Pandion haliaetus*	RW, W
Northern harrier	*Circus cyaneus*	G, RW
Turkey vulture	*Cathartes aura*	SDS, PJ, S, G, MS, MC, PP, RW, A, W
Lewis' woodpecker	*Melanerpes lewis*	MS, PP, RW
Abert's towhee	*Pipilo abertii*	RW
American avocet	*Recurvirostra americana*	RW
Mountain plover	*Charadrius montanus*	SDS
Lucy's warbler	*Vermivora lucidae*	SDS, RW
Sage grouse	*Centrocercus urophasianus*	S
American white pelican	*Pelecanus erythrorhynchos*	RW, W
Bobolink	*Dolichonyx oryzivorus*	RW
Virginia's warbler	*Vermivora virginae*	PJ, MS
Gray vireo	*Vireo vicinior*	PJ, MS
Bell's vireo	*Vireo bellii*	RW
Black rosy finch	*Leucosticte atrata*	G
Long-billed curlew	*Numenius phaeopus*	G
Sharp-tailed grouse	*Tympanuchus phasianellus*	S, G
Brewer's sparrow	*Spizella breweri*	SDS, S
Black swift	*Cypseloides niger*	RW
Black-necked stilt	*Himantopus mexicanus*	RW
Broad-tailed hummingbird	*Selasphorus platycercus*	RW
Yellow-billed cuckoo	*Coccyzus americanus*	RW
Black-throated gray warbler	*Dendroica nigrescens*	PJ, MS
Three-toed woodpecker	*Picoides tridactylus*	MC
Sage sparrow	*Amphispiza belli*	SDS, S
Gambel's quail	*Callipepla gambelii*	SDS, RW
Flammulated owl	*Otus flammeolus*	MC, PP, RW, A
Tree swallow	*Tachycineta bicolor*	MC, PP, RW, A
Black-capped chickadee	*Parus atricapillus*	MC, PP, RW, A

Common Name	Species	Habitat
Mountain chickadee	*Parus gambeli*	MC, PP, RW, A
Mammals		
Silver-haired bat	*Lasionycteris noctivagans*	MC, PP, RW, A
Ringtail	*Bassariscus astutus*	MC, PP, RW, A
Black bear	*Ursus americanus*	MS, MC, PP, RW, A
Mountain lion	*Felis concolor*	PJ, MS, MC, PP
Coyote	*Canis latrans*	SDS, PJ, S, G, MS, MC, A
Mule deer	*Odocoileus hemionus*	S, MS
Rocky Mountain elk	*Cervus elaphus*	G, MS, MC, A
Desert bighorn sheep	*Ovis canadensis nelsoni*	S, G, MS
Rocky Mountain bighorn sheep	*Ovis canadensis canadensis*	S, G, MS
Pronghorn	*Antilocapra americana*	SDS, S, G
Bison	*Bos bison*	G, MS, MC, PP, A

Habitat Codes: SDS = salt desert shrub, PJ = pinyon and juniper woodland, S = sagebrush, G = grassland, MS = mountain shrub and oak, MC = mixed conifer, PP = ponderosa pine, RW = riparian/wetland, A = aspen, and W = water

Fisheries

Seventy-three fish species and numerous species of mollusks and other macroinvertebrates are found on BLM-administered lands in Utah. Fish species found on BLM-administered lands that are not ESA-related or BLM sensitive species include the following: rainbow, brown, brook, and lake trout, suckers, shiners, dace, chubs, sculpins, and a variety of lesser known or less abundant species.

Native fish demonstrate a wide variety of life histories, including resident populations that inhabit small headwater streams with shorter migratory ranges, populations that use larger streams and main rivers, populations that are found in lake habitats, and populations that spawn in rivers or streams.

The quality of aquatic habitats on BLM-administered lands within Richfield planning area varies widely. Generally, aquatic habitats have declined since the European settlement of the region began in the 1850s. Disturbances contributing to decline of habitat have included logging, over grazing, mining, recreation, water diversion for irrigation and domestic supply purposes, other surface disturbing activities, and introduction of non-native species, as well as lack of wildland fire, insect infestation, disease, wind, floods, landslides, avalanches, and other surface disturbing activities. These disturbances have resulted in the loss of riparian vegetation and subsequent changes in vegetation species composition.

Non-game Species

For the purposes of this document, non-game species are identified as raptors, migratory birds, small mammals, carnivores and predators, and amphibians and reptiles. The occurrence and distribution of each of these species are discussed briefly below.

Raptors: Raptors (birds of prey) found in and adjacent to the Richfield planning area include several species of hawks (e.g., ferruginous hawk, red-tailed hawk, and northern goshawk), eagles (e.g., golden eagle), falcons (including the American kestrel), owls, ospreys, northern harriers, and turkey vultures. These species inhabit various ecosystems and consume a wide range of prey.

During the breeding season, raptors are particularly sensitive to disturbance. Behavior during and following disturbance could result in nest abandonment or reduced productivity. Accordingly, raptors are provided with protection designed to prevent disturbance under the following federal acts: Migratory Bird Treaty Act of 1918, Eagle Protection Act of 1962 (as amended), and, for federally listed species only, the ESA of 1973 (as amended). In addition, the Utah Field Office of the USFWS has issued guidelines for establishment of disturbance-free buffer zones around raptor nests and identification of mitigation techniques available for use when management or development activities conflict with the buffer zones. In Utah, the largest buffer zone suggested for any raptor nest is one mile (Romin and Muck 2002).

Migratory Birds: Migratory birds periodically travel from one region to another for breeding or feeding purposes. Generally, they nest in temperate North America and over-winter in portions of Mexico and Latin America. Migratory birds represent a diversity of species, including shorebirds, waterfowl, passerines (perching birds), and raptors, and may nest in any or all of the vegetation types within the planning area.

The Utah Division of Wildlife Resources (UDWR) has prepared the Partners in Flight Avian Conservation Strategy, a document evaluating the status of 231 bird species, many of which are migratory, that breed in Utah (Parrish et al. 2002). Twenty-four bird species have been prioritized for management and protection, and occur mostly within four habitat types that have been designated by the UDWR as priority habitats. These habitats correlate with GAP cover types and include salt desert shrub, pinyon and juniper woodland, sagebrush, and riparian/wetland (Parrish et al. 2002). The 24 priority bird species include the Lewis' woodpecker, Abert's towhee, American avocet, mountain plover, Lucy's warbler, sage grouse, American white pelican, bobolink, Virginia's warbler, gray vireo, Bell's vireo, black rosy finch, long-billed curlew, sharp-tailed grouse, Brewer's sparrow, black swift, black-necked stilt, broad-tailed hummingbird, ferruginous hawk, yellow-billed cuckoo, black-throated gray warbler, three-toed woodpecker, sage sparrow, and Gambel's quail.

Some migratory birds are cavity nesters and may be found in forested habitat of varying elevation throughout the state. Cavity-nesting birds include several species of woodpecker. Woodpeckers are considered primary cavity nesters because they typically excavate their own nest cavities. Secondary cavity nesters are often incapable of excavating their own nest cavities and, therefore, rely upon existing cavities that have been previously established by woodpeckers. Secondary cavity nesters include species such as the American kestrel, flammulated owl, tree swallow, and black-capped and mountain chickadees. While cavities may be excavated in live trees, standing dead trees (e.g., snags) are typically preferred by primary cavity nesters and may be easier for secondary cavity nesters to access. Trees in the mixed conifer, ponderosa pine, aspen, and riparian/wetland habitat types each contain important nesting resources for cavity-nesting species.

Small Mammals: Small mammals include species groups such as prairie dogs, bats, squirrels, mice, and rabbits. Because these groups fill a variety of niches, small mammals are found in most habitat types within the planning area. Although the term "cavity nester" typically refers to bird species, it may also include small mammals that use tree cavities for denning purposes. Small cavity-nesting mammals include species such as the silver-haired bat and ringtail.

Carnivores and Predators: These species are generally large, long-lived, solitary species. Although they are considered here to be non-game species, a variety of carnivores are managed by the UDWR. More plentiful carnivores are often hunted for food, sport, or as a management technique to allow prey species to thrive. Utah predators include species such as the black bear, mountain lion, and coyote. Although the black bear and mountain lion tend to remain more secluded in the mountain shrub and oak, and mixed conifer communities of mountains and foothills, the coyote may venture into urban and agricultural areas as a means of finding vulnerable prey. In general, where there is a prey source, there are predators. And because predators consume birds and small mammals and often travel over large distances, they may be found anywhere within the planning area.

Amphibians and Reptiles: Because the majority of Utah's wildlife habitats are arid or semi-arid and such a small percentage of habitats are associated with water, reptiles are more prominent than amphibians. Reptiles are found throughout the planning area and may occur in any habitat type. Amphibians are found in and adjacent to wetlands, rivers and streams, mountain lakes, runoff pools in rock formations, and both ephemeral and permanent livestock watering ponds.

Big Game Species

Big game species include large, hunted animals such as mule deer, Rocky Mountain elk and pronghorn. Given the economic importance of big game, this group is typically managed more closely than other wildlife groups. Accordingly, UDWR has identified critical seasonal use ranges within the planning area for mule deer, Rocky Mountain elk, desert bighorn sheep, Rocky Mountain bighorn sheep, pronghorn, and bison. **Table 3.10** shows big game species and the acres and percentage of seasonal use areas per species, within the planning area. These acreages refer only to those big game habitats that are considered most important by the UDWR.

Mule Deer: Mule deer occupy most ecosystems, but are characteristically found in shrublands with rough, broken terrain and abundant browse and cover. Mule deer winter diets consist primarily of browse in the form of sagebrush, bitterbrush, mountain mahogany, and other shrubs, as well as a small amount of grasses and pinyon or juniper. During the other three seasons, there is much wider distribution of nutritional resources. Mule deer summer use habitat primarily consists of mixed conifer, aspen, riparian/wetland, and grassland, while winter habitat primarily consists of low-elevation sagebrush or sagebrush and mountain shrub and oak habitats on south-facing slopes.

Rocky Mountain Elk: The Rocky Mountain elk is a generalist, feeding on forbs and grasses during the spring and summer and grasses and shrubs throughout the fall and winter. These feeding relationships are variable and depend largely on location. Various habitats include winter ranges, calving areas, and summer ranges. Calving areas are used from mid-May through June. They are typically located at higher elevations than wintering grounds; consist of grassland, mountain shrub and oak, mixed conifer and aspen; and occur near cover, forage and water resources (Fitzgerald et al. 1994).

Desert and Rocky Mountain Bighorn Sheep: Bighorn sheep inhabit remote, mountain, and desert locations, and are often found on cliffs and rocky slopes in rugged canyons. These sheep are most closely associated with sagebrush, grassland, and mountain shrub and oak habitats (Chapman and Feldhamer 1982). Bighorn sheep are active during the daytime and feed on grasses, trees and shrubs, depending upon availability, succulence, and nutrient content. Two subspecies of bighorn have important seasonal use areas within the planning area: desert and Rocky Mountain. The desert bighorn sheep is found in the central and southern part of the state, as well as some of the west desert mountain ranges. The Rocky Mountain bighorn sheep can be found in several mountain ranges in central and northern Utah.

Pronghorn: The pronghorn is typically associated with salt desert shrub, sagebrush, and grassland habitats throughout its entire range (UDWR 2004; Burt and Grossenheider 1980). It is most active during the daytime and consumes sagebrush, winterfat, cacti, grasses and forbs (UDWR 2004; Burt and Grossenheider 1980). There are 24 Pronghorn Management Units within the state. The herd on Parker Mountain is used as a nursery herd for Utah and surrounding states.

Bison: In Utah, the bison is found in grassland, mountain shrub and oak, mixed conifer, ponderosa pine, and aspen habitat. It grazes primarily on common grasses, but also consumes other available vegetation. Historically, it ranged over a much larger area than it does today. Due to hunting and habitat alteration, its historic number and range size have decreased dramatically. It is still found in the Henry Mountains. They are hunted on a limited and controlled basis. The largest free-ranging herd in the United States inhabits the Henry Mountains.

TABLE 3.10: BIG GAME SEASONAL USE AREAS IN RICHFIELD PLANNING AREA

Species	Seasonal Use Range & Rank	Approximate Acres Within the Planning Area	Approximate % of Seasonal Use Area per Species
Mule Deer	Summer Critical	38,844	2.4
Mule Deer	Winter Critical	601,021	10.5
Rocky Mountain Elk	Winter Critical	217,747	5.5
Desert Big Horn Sheep	Year-Long Critical	144,751	4.9
Rocky Mountain Big Horn Sheep	Year-Long Critical	43,700	2.5
Pronghorn	Winter Critical	102,844	54.2
Bison	Year-Long Critical	251,214	17.3

3.3.15 SOILS

Soils in the planning area have developed from bedrock, volcanic activity, rocks, and minerals deposited by rivers and glacial activity, windblown silt and sand. The material is derived primarily from the sedimentary, metamorphic and volcanic rocks of the mountain ranges and highlands in the region. Weathered substrates from these source materials have chemical and physical characteristics that may favor certain vegetation types and, combined with climatic influences, can provide habitats for various plant species. Soil source materials or substrates found in the planning area fall into soil types such as alluvium, calcareous, clay, conglomerate, duff, granitic, gravelly loam, gypsiferous, igneous, limestone, loam, quartzite, sandstone, sandy, and shale.

The presence of biological crusts in arid and semi-arid lands influences the soil environment by reducing soil erosion (from both wind and water), fixing atmospheric nitrogen, retaining soil moisture, and providing living organic surface mulch. This crust consists of a variety of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria (Belnap and Lange 2003). A crust's development is strongly influenced by soil texture, soil chemistry, and successional colonization by crustal organisms. In some ecosystems, such as those characterized by highly erosive marine sediments and little vegetative cover, physical crusts such as vesicular chemical crusts and desert pavement can also provide protection from wind erosion.

Erosion and Run-off

Soils may be eroded by water or wind. Water erosion is influenced by the intensity and duration of precipitation, soil texture, soil organic matter, permeability, topography, and vegetative (or artificial) cover. Areas with soils on steep slopes, low infiltration rates, and minimal vegetative cover have the highest erosion hazard. Physical evidence of water erosion includes features such as rills, gullies, pedestals, or larger sedimentation features such as landslides or choked stream channels. Wind erosion also has the potential to move large volumes of soil and is primarily a function of wind velocity and grain size (Ritter et al. 1995).

Erosion may decrease soil productivity, expose plant roots, impede revegetation efforts, and increase salinity downstream. Many soils throughout the planning area have features that make reclamation and revegetation difficult. These limiting features involve salinity, sodium content, clayey and sandy textures, drought conditions, alkalinity, low organic matter content, shallow depth to bedrock, stones and cobbles, propagule-rich soil, and high wind-erosion potential. Certain geological formations, such as the Mancos shale, tend to form soils that are highly erosive. The hazard for soil erosion by water and wind is rated at the County level soil surveys conducted by the National Resource Conservation Services (http://soildatamart.nrcs.usda.gov).

Soil Quality and Health

The capacity of a soil to sustain plant and animal productivity is related to its inherent physical, biological and chemical properties as well as its current health or condition. Three key attributes of soil and rangeland health have been identified that may assist in assessing the status or health of an area. Site stability relates to the ability of the soil to resist erosion (and loss of nutrients) by wind and water. Hydrologic function is the capacity of the site to capture, store, and safely release water from rainfall and snowmelt. Biotic integrity is the capacity of a site to support both functional and structural plant, animal, and soil biological communities within the range of variability for that site (BLM 2000).

Effects of soil health and erosion are often associated with water quality and wetland/riparian areas. These resources are discussed in the water quality and wetlands and riparian zones sections of this chapter, respectively.

3.3.16 SOCIOECONOMICS

The Richfield planning area, which encompasses Juab, Millard, Piute, Sevier, Sanpete and Wayne Counties as well as eastern Garfield and parts of Kane Counties, represents the Range of Influence (ROI) for social and economic activities pertaining to the Richfield planning area. The ROI is defined as the geographical area in which the principal direct and indirect socio-economic effects of the Proposed Action and the No Action Alternatives for the Richfield planning area are likely to occur.

Population and Employment

Baseline data for the Richfield ROI includes population and demographic data as well as current business and economic statistical information for the state obtained from the Bureau of Labor Statistics and the Bureau of the Census, based on 2000 census data. Additional information was obtained from "Population, Employment, Earnings, and Personal Income Trends"-derived data compiled from the Sonoran Institute database prepared for the BLM (Sonoran Institute 2005). These data are summarized below.

The ROI counties collectively had a total population in 2000 of 66,192. The primary population centers include the towns of Richfield in Sevier County (population 6,936), Nephi in Juab County and Ephraim in Sanpete County (each with a population of approximately 5,000), Manti, and Delta. The ROI is predominantly rural, however, and the majority of residents in each ROI county reside on farms, ranches, or unincorporated county land. In addition, state, federal and Indian reservation lands make up the majority of the land area of the ROI. When wildfires occur on these lands, adjoining private lands and public grazing allotments are at risk. Due to the proximity of private lands to Federal lands, human-caused wildfires burn from private onto public lands each year, causing increased firefighting costs and risks to wildland firefighters.

Although only a small portion (less than 10 percent) of employment in the ROI is in the agricultural sector, the predominant agricultural activity is livestock (primarily beef cattle). There is heavy reliance on public lands for grazing resources. Grazing resources are described in detail in section 3.3.3 of this chapter.

Employment composition for the ROI has changed since 1970. Farm and Agricultural Services lost almost half of its share of the jobs in the ROI. The Manufacturing and Government sectors had decreases in share of total employment, while the Services and Professional sectors had an increase of over 72.2 percent for the period. Major growth components of this sector included Services and Retail Trade, which experienced growth rates of 31.7 percent and 22.6 percent respectively. The Mining and Construction sectors slightly increased their share of the ROI employment.

Other economic uses of public lands in the ROI include rights-of-way for utility corridors, roads, and pipelines; and recreational uses that provide a tourist draw to the region.

3.3.17 WILDERNESS CHARACTERISTICS

"Wilderness characteristics" are defined as features of the land associated with the concept of wilderness (see the wilderness study areas section of this chapter for the definition of wilderness). Lands with wilderness characteristics may be managed to protect and/or preserve some or all of those characteristics. This may include protecting certain lands in their natural condition and/or providing opportunities for solitude, or primitive and unconfined types of recreation (USDI 2003).

Non-Wilderness Study Area Lands with Wilderness Characteristics

There are 19 areas that have been identified as having wilderness characteristics within the planning area (BLM 1999). These areas are shown on **Figure 3.7**. Within the planning area 197,236 acres have wilderness characteristics. **Table 3.11** lists non-WSAs with wilderness characteristics and acreage.

Non-Wilderness Study Areas Lands Likely to Have Wilderness Characteristics

The public has submitted information to the Utah BLM suggesting that areas not specifically identified by the BLM during prior inventories have wilderness characteristics and, therefore, should be managed to preserve those values. The BLM evaluated and assessed the information and determined that four areas, totaling 122,719 acres, are likely to have wilderness characteristics. These areas are shown on **Figure 3.7**. **Table 3.12** describes the acreage found likely to have wilderness characteristics.

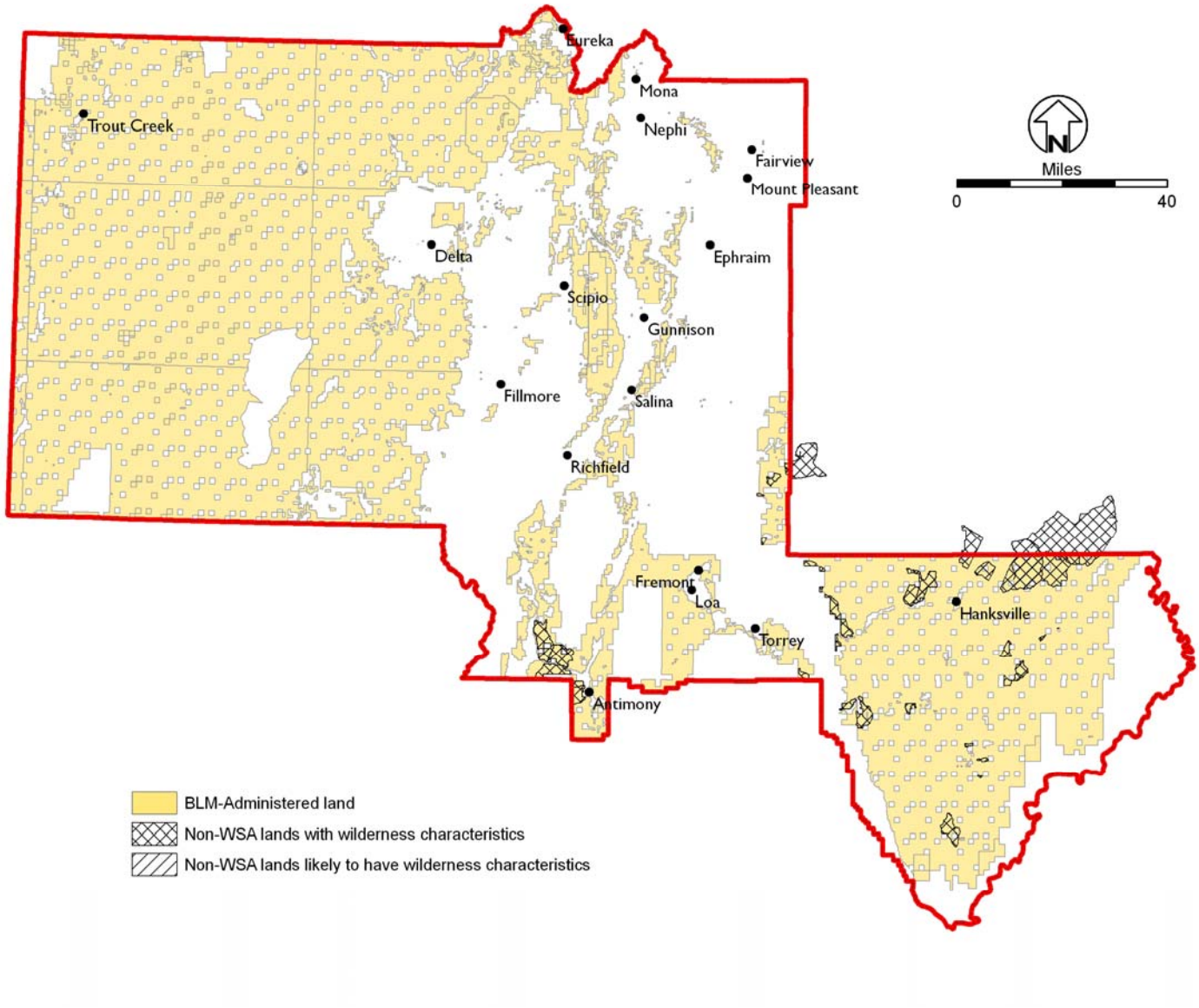
TABLE 3.81: NON-WILDERNESS STUDY AREAS WITH WILDERNESS CHARACTERISTICS

Name	Acres
Bullfrog Creek	7,358
Dirty Devil/French Spring	27,683
Flat Tops	7,629
Fremont Gorge	1,235
Hunter Spring	1,434
Jones Bench	615
Kingston Ridge	10,242
Limestone Cliffs	2,051
Mount Ellen/Blue Hills	1,330
Mount Hillers	1,169
Mount Pennell	6,199
Notom Bench	1,812
Phonolite Hill	7,962
Pole Canyon	4,614
Red Desert	10,078
Rock Canyon	18,251
Rocky Ford	6,711
Sweetwater Reef	72,326
Wildhorse Mesa	8,538
TOTAL	**197,236**

TABLE 3.92: NON-WILDERNESS STUDY AREA LANDS LIKELY TO HAVE WILDERNESS CHARACTERISTICS

Name	Acres
Flat Tops	26,090
Rock Canyon	1,297
Sweetwater Reef	79,508
Wildhorse Mesa	15,824
TOTAL	**122,719**

FIGURE 3.7: NON-WSA LANDS (WITH/OR LIKELY TO HAVE) WILDERNESS CHARACTERISTICS IN THE RICHFIELD PLANNING AREA



CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter discloses the predicted direct, indirect, and cumulative effects of the alternatives described in Chapter 2 and **Appendices C, D** and **E**. The analyses of impacts of fire and fuels management actions on each resource are discussed in a short and long-term context. A cumulative effects section is presented at the end of the Chapter, which analyzes the effects of past, present and reasonably foreseeable actions along with the effects of the Proposed Action and No Action Alternatives.

To provide additional context in the analysis of impacts from fire and fuels management actions associated with both alternatives, a general description of fire's effects on each resource is presented as **Appendix F**. These general effects would occur regardless of what alternative is selected.

Site-specific locations, geographic size and extent, and intensity of management actions and wildfire events are not known. Therefore, the effects analysis is focused on impacts across the entire planning area and not on particular sites or FMUs. Prior to implementation of management actions, additional environmental analyses would occur for site-specific proposals. The following assumptions were used in the effects analysis:

- Short term is defined as less than five years, and long term is defined as six to fifteen (+) years.
- The No Action Alternative's only appropriate management response is suppression. Aggressive suppression (limit fire's size) will be taken on all wildfires, commensurate with firefighter and public safety, values at risk and cost effectiveness.
- The Proposed Action Alternative's appropriate management response includes both suppression and wildland fire use. Aggressive suppression (limit fire's size) will be taken on all wildfires, commensurate with firefighter and public safety, values at risk and cost effectiveness. Wildland fire use will be applied when resources will benefit from burning.
- Under the Proposed Action, wildland fire use would be appropriate for approximately five percent of the planning area. Wildland fire use is not included in the No Action Alternative.
- If the Proposed Action were implemented, a measurable reduction in occurrence, severity, or size of wildfires would not be expected in the short term. The difference in impacts between the alternatives would be primarily in the long term as more vegetation communities change.
- References to impacts from wildfire suppression include post-suppression ESR treatments.
- Prescribed burning is accomplished to benefit resources in the long term.
- Planned fuel treatments include prescribed fire and non-fire fuel treatments. Chemical and biological treatments would be relatively uncommon, and would occur on relatively few acres in the short term.. Since this is much less than 1% of the planning area, any impacts from chemical or biological treatments would be discussed in greater detail in subsequent, site-specific analysis.
- Planned actions are implemented only in areas with a low risk of invasive and noxious weed infestation or when the action includes a component (e.g., seeding) to reduce the risk of infestation.
- Fuel treatments acres in the No Action Alternative would be fewer than in the Proposed Action.
- Seeding actions often follow wildfire suppression (these are considered ESR actions, described below), and sometimes follow prescribed fire and non-fire fuel treatments (mechanical, biological and chemical). Seeding actions would be implemented to stabilize soils, improve establishment of grass, forb and shrub communities, and prevent establishment of non-native invasive species.

4.2 PROPOSED ACTION

4.2.1 AIR QUALITY

Short-term Impacts

The Proposed Action includes several air quality RPMs to minimize air quality impacts, including visibility, to sensitive areas such as NAAs and Class 1 areas. Potential impacts, both long and short-term, would be minimized through action specific analysis and permitting and coordination efforts with the Utah Interagency Smoke Management Program to ensure compliance with all local, state, and federal regulations, as described in Chapter 3. With these laws and protection measures in place, fire management activities would not unlawfully exceed national ambient air quality standards or impact NAAs or other sensitive areas in Utah due to the Proposed Action. However, circumstances beyond the BLM's control (i.e., wildfires) could impact air quality, but these acts of nature are outside the scope of the Proposed Action.

Figure 4.1 presents the location of NAAs and Class I areas located in the area of consideration for the planning area with FMUs categorized by relative desirability of wildland fire (Categories A through D). Smoke from fires in FMUs where wildland fire is more desirable (Categories C and D) could affect air quality areas that have been identified as sensitive to air quality (such as the Utah County NAA and Capitol Reef National Park).. However, these impacts would be minor with the application of RPMs, and coordination with the Utah Interagency Smoke Management Program. In addition, coordination with the Utah Interagency Smoke Management Program would also minimize impacts where regulations are not specifically applicable or broader goals are in place, such as visibility impacts on transportation corridors and Class I areas, respectively.

Wildland fire use, prescribed fire, and non-fire fuel treatments can be effective methods for reducing heavy fuels loads that could adversely impact air quality during a wildfire. Prescribed fires typically would be much smaller and involve less combustion, therefore lower emissions and occur when weather conditions and the fuel characteristics are optimal to enhance air pollutant dispersion (NWCG 2001). Wildland fire use and an anticipated increase in prescribed fire would be coordinated with the SMP program coordinator to prevent exceeding air quality standards and to minimize impacts on NAAs and other sensitive areas (Utah Interagency Smoke Management 2004). Impacts due to prescribed fire events would be anticipated to increase from current conditions, but each event would be planned and undergo environmental review to quantify and minimize those impacts.

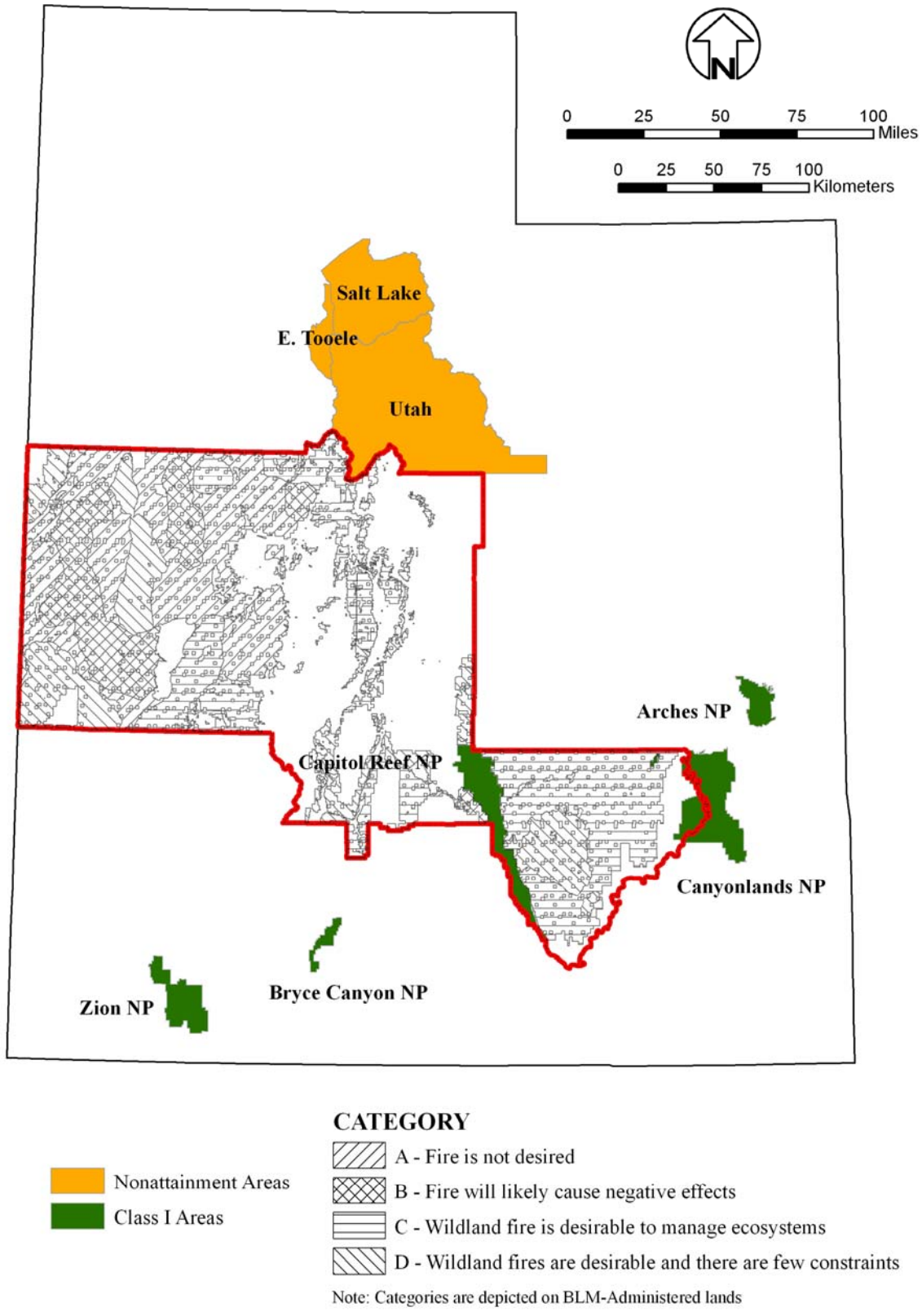
By utilizing non-fire mechanical treatment options for fuels reduction, impacts on air quality would be reduced since no smoke would be produced.

Long-term Impacts

The components of the Proposed Action (wildfire suppression, wildland fire use, prescribed fire, and non-fire fuel treatments) would collectively decrease the potential for the occurrence of severe and uncharacteristic wildfires and create a trend toward a more "natural" fire occurrence on BLM-managed lands. This would result in the agency managing fire and associated emissions more effectively. Fuel reduction efforts would decrease the potential for negative impacts on human health.

The use of prescribed fire would continue to have a minor impact on air quality. The planned nature of these events would allow the BLM to schedule and locate them for optimal control of emissions. As discussed above, the major impact from these actions is the trend created to decrease the FRCC and the associated occurrence of severe and uncharacteristic wildfires.

FIGURE 4.1: NON-ATTAINMENT AREAS AND CLASS I AREAS AND FIRE MANAGEMENT CATEGORIES UNDER THE PROPOSED ACTION



4.2.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The five ACECs in the planning area are Beaver Wash Canyon, Gilbert Badlands, North Cainevelle Mesa, South Caineville Mesa, and Gandy Salt Marsh. As shown in **Figure 4.2**, the majority of ACEC lands lie within Category C FMUs. One ACEC, Gandy Salt Marsh, is within a Category A designated FMU. ACECs in the planning area have been designated to protect the following relevant and important values: botanical resources including riparian areas, fish and wildlife resources, geologic resources, and threatened and endangered species.

Short-term Impacts

Application of the AMR during a wildland fire would reduce adverse impacts or impairment of values inherent to each ACEC; the AMR may include wildland fire use, limiting the use of mechanical suppression activities, allowing fires to burn to natural boundaries, or using aerial suppression efforts. Suppression strategies would recognize protection of the unique ACEC values threatened by wildfire. Additionally, due to the increased emphasis on suppression, those ACECs within Category A FMUs (Gandy Salt Marsh) would likely see more short-term impacts from suppression activities than those lands in Category C FMUs.

Though minimized by following management guidelines, short-term impacts on ACECs resulting from management response to wildland fire efforts may include ground disturbances associated with suppression and control efforts (e.g. hand lines). Wildfire suppression activities could have some direct adverse impacts on components of ACECs. These short-term and limited impacts could include disturbance of or loss of vegetation (including riparian areas), degradation or loss of habitats for special status species and fish and wildlife, damage or destruction of fragile geologic resources. These impacts would be minimized by post-wildfire rehabilitation efforts. Impacts on these physical resources are discussed in their respective sections, including fish and wildlife resources, vegetation, riparian, and special status species.

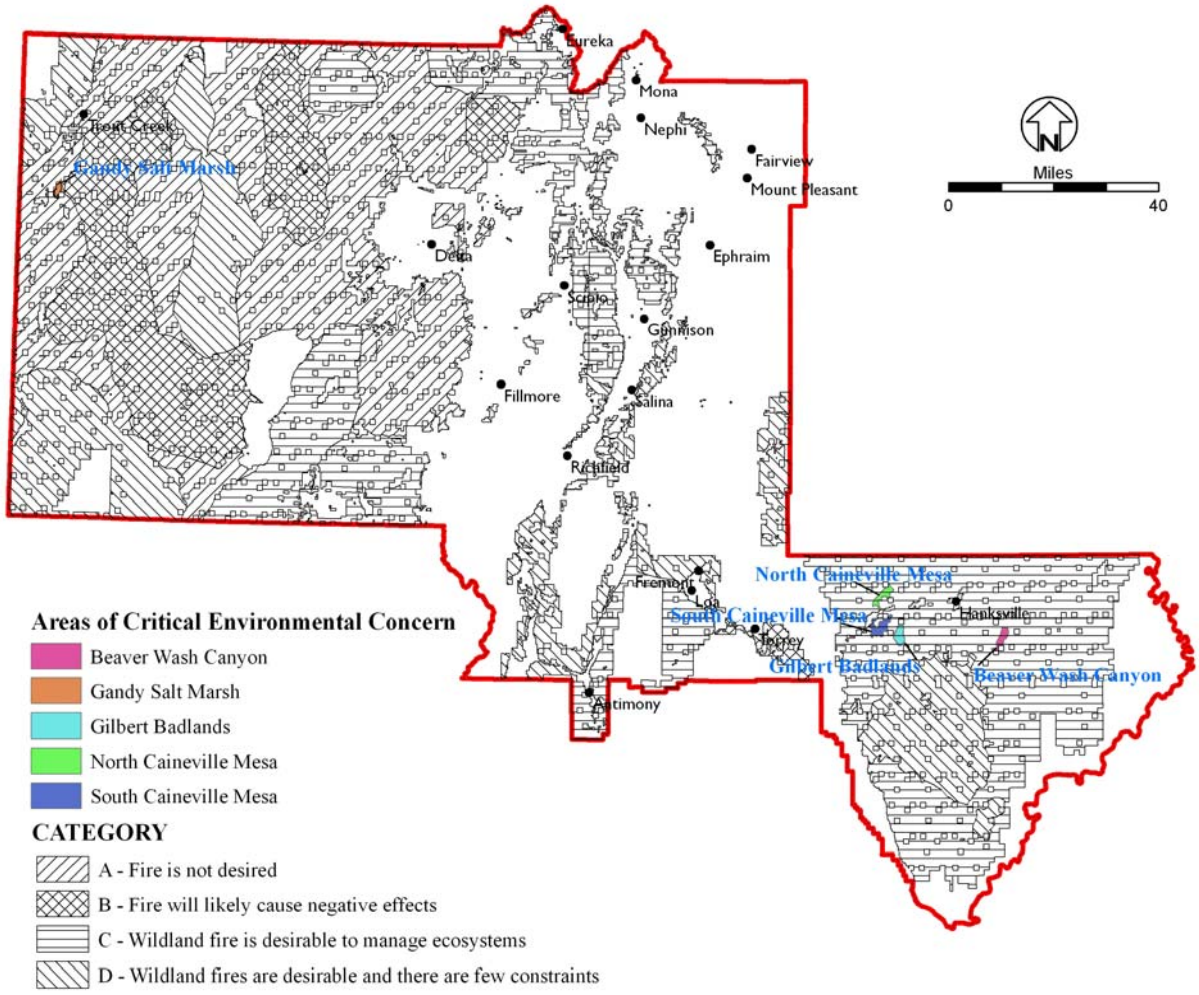
ESR activities, including seeding, would be used to protect the natural and unique ACEC values. ESR efforts may be noticeable after fire events as the areas become re-vegetated. Suppression and restoration efforts would be designed, when possible, to avoid impairment of values, thus would not likely impact or impair values the ACEC was designated to protect. Impacts associated with wildland fire use would be similar to those described for wildfire suppression.

All planned management activities, including prescribed fires and non-fire treatments, would undergo a site-specific environmental evaluation to determine potential impacts on the resource prior to being approved. Planned actions would have a minor effect on ACECs in the short term since those actions undergo additional environmental review, and would likely not be conducted if they would considerably damage or impair those relevant and important values the ACEC was designated to protect.

Long-term Impacts

The Proposed Action would result in modification of the current condition toward a DWFC that would be more historically representative of the natural vegetation cover. Long-term impacts associated with the use of an AMR, and the planned fuel reduction actions in ACECs would include the decreased risk of large, severe wildfire events. The Proposed Action would provide long term protection to relevant and important values including cultural resources, relic vegetation, riparian resources, geologic formations, and visual resources.

FIGURE 4.2: AREAS OF CRITICAL ENVIRONMENTAL CONCERN AND FIRE MANAGEMENT CATEGORIES UNDER THE PROPOSED ACTION



4.2.3 CULTURAL RESOURCES

Short-term Impacts

The direct effects of wildfire suppression efforts, wildland fire use, prescribed fire, and non-fire fuel treatments could impact the thousands of cultural resource sites within the Richfield planning area. RPMs incorporated into the Proposed Action, such as pre-treatment surveys and subsequent avoidance (as well as the Utah State Protocol Agreement 3-7-01, and Programmatic Agreement for Wildland Fire Use), would minimize effects. However, not all cultural resources are known, easily detectable or avoidable.

Cultural resources are often at greater risk from wildfire suppression activities than from the wildland fire itself. Suppression efforts could generate surface disturbances, such as fireline construction (hand and bulldozer lines), the establishment of helicopter bases, safety zones, fire camps, etc. These disturbances could destroy artifacts and the integrity of cultural resource sites. Water, foam detergents, and fire retardants could damage artifacts and features by causing swelling and contraction. Other potential short-term impacts would include damage (e.g., breakage, spalling, corrosion, staining, rusting) associated with rapid cooling of archaeological materials. Discoloration or warping of metallic surfaces could also occur. Rock art is particularly sensitive to retardants. For all wildland fires or prescribed fires, post-fire vandalism and artifact collection could increase with visibility of sites increasing after vegetation removal.

However, the Proposed Action has the potential to move more acres toward FRCC1 and toward DWFC than the No Action Alternative due to wildland fire use in up to five percent of the areas. Historic-aged resources would be more prone to impacts from wildland fire relative to prehistoric-aged resources (SHPO 2005) under the Proposed Action since those features are typically more sensitive to fire. This would include sites such as the Morrel, Lesley, Line Cabin, and Corral. A cultural resource specialist would be consulted during wildland fire use, suppression and subsequent ESR activities in areas containing sensitive cultural resources, which would help to minimize impacts.

ESR efforts with the potential to affect cultural resources are subject to the requirements of Section 106 of NHPA, as amended, 36 CFR 800, which requires inventory and consultation with the Utah State Historic Preservation Officer. These measures would reduce the potential for impacts on cultural resources from ESR actions.

The potential for prescribed fire, wildland fire use and non-fire fuel treatments to impact cultural resources would be mitigated, on a project-by-project basis, during all phases of planning and implementation. Cultural resource inventories to comply with the NHPA would be completed to reduce impacts to cultural resources. Complete avoidance of known sites would be the most commonly selected method for the management of cultural resources located in the area of potential effect for prescribed fire and non-fire fuel treatments. For prescribed fire and non-fire fuel treatments, the potential for impacts on cultural resources would be considered minor.

Long-term Impacts

Although impacts from suppression, wildland fire use, prescribed fire, and non-fire fuel treatments would occur over the long term, a decrease in heat and duration-related impacts on cultural resources would result in the long term. The long-term, net effect of the Proposed Action would be greater protection of cultural resources than under the No Action Alternative.

4.2.4 INVASIVE, NOXIOUS AND NON-NATIVE SPECIES

Short-term Impacts

Invasive and noxious weed populations often multiply after wildfires, taking advantage of disturbed sites denuded of native vegetation. ESR after wildfire suppression would help minimize the potential for weed invasion after a wildfire.

Because wildland fire use would only occur in areas where a low potential for noxious and invasive weed occurrence and spread exists, impacts on the spread of noxious and invasive weeds would be minimal. Funds from other than ESR could also be used to minimize invasive and noxious weed impacts post-fire.

Prescribed fire and non-fire treatments would be planned to aid in the removal of noxious and invasive weeds. In some cases where weeds have been identified as an issue, seeding would be planned in conjunction with prescribed fire and non-fire fuel treatments. After any surface disturbing treatment, proper rehabilitation and seeding with the appropriate native and non-native species would be essential to deter the re-establishment of weeds. Encouraging the growth and productivity of desirable vegetation would typically inhibit the re-establishment of invasive weeds. The degree and type of rehabilitation utilized would depend upon the nature and severity of the weed treatment, and the severity of the invasion prior to the treatment.

Long-term Impacts

The appropriate application of wildland fire use and prescribed fire, and the likelihood of less severe wildland fires (which would the lower the potential for post-fire weed infestation), in combination with continuing seeding, rehabilitation, monitoring, and weed treatment, would reduce the spread and occurrence of weeds following wildland fire and non-fire fuel treatments..

4.2.5 NATIVE AMERICAN RELIGIOUS CONCERNS

Short-term Impacts

Often, the facets of a landscape valued in Native American religious beliefs and practices are more at risk from impact due to wildfire suppression activities than from the fire itself. Ground-disturbing suppression efforts, such as hand and bulldozer lines, helicopter bases, safety zones, fire camps, could have the potential to impact integrity of sites and vegetation used by Native Americans in their religious practices.

Wildland fire use would only occur if expected impacts to vegetation and other resources are acceptable and its use is restricted to only 5% of the planning area, hence impacts would be minimal.

Prescribed fire and non-fire fuel treatments events are planned actions, where appropriate Native American consultation would occur to minimize potential impacts.

Long-term Impacts

Impacts from prescribed fire and non-fire fuel treatments would be minor, based on consultation for site-specific projects. The Proposed Action would help protect the long-term productivity of vegetation use areas and religious sites from severe wildland fire impacts. Wildland fire use, prescribed fire and non-fire fuel treatments, could result in long-term beneficial effects for places of traditional cultural importance by bringing the native vegetation back to a more historical condition.

A decrease in the impact on Native American Religious Concerns from ground-disturbing suppression activities would be realized in the long term, due to the likely decrease in number of severe wildland fires.

The increased occurrence of wildland fire use in appropriate areas would result in potential impacts; however, those impacts would be in conformity with natural processes that have been interacting with Native American historic religious experiences and sites. As more vegetation trends toward a lower FRCC, opportunities could exist to expand wildland fire use. Ground-disturbing actions, including seeding, are not typically associated with wildland fire use, thereby removing the potential for associated long-term impacts on vegetation use areas and religious sites.

4.2.6 SPECIAL STATUS SPECIES

Short-term Impacts

ESA-related Species

In accordance with Section 7(a) 2 of the ESA of 1973, as amended, the Utah BLM State Office engaged in formal Section 7 consultation with the USFWS. This process involved preparing a biological assessment, which included impact analyses and subsequent determinations for all federally listed and proposed species. It also considered potential project-related effects (direct and indirect) to each species and their habitat (including those areas designated as critical habitat) from the fire management actions presented in the Proposed Action.

Effects determinations within the biological assessment include May Affect, Not Likely to Adversely Affect (NLAA); May Affect, Likely to Adversely Affect (LAA); and Not Contribute to Federal Listing (NCL). Each determination was based on a combined analysis of potential effects from the Utah Land Use Plan Amendment for Fire and Fuels Management EA and the five FMP EA Proposed Actions (Salt Lake, Vernal, Moab, Southern Utah Support Center, and Richfield). For any species with designated or proposed critical habitat, the determination for effects on that habitat was combined with the determination for effects on the species. In this EA, only determinations for each species that is known to occur within, or has potential to occur within, the Richfield planning area are presented. Determinations take into consideration potential short-term, long-term, and cumulative impacts from the Proposed Action.

Species that were given a determination of LAA include the following: Canada lynx, Utah prairie dog, southwestern willow flycatcher, California condor, bald eagle, Mexican spotted owl, humpback chub, bonytail, Colorado pikeminnow, razorback sucker, San Rafael cactus, Maguire daisy, Winkler cactus, Ute ladies'-tresses, and last chance townsendia. Designated critical habitats have been identified (and effects analyzed) for the Mexican spotted owl, humpback chub, bonytail, Colorado pikeminnow, and razorback sucker. The Barneby reed-mustard and Wright fishhook cactus were given a determination of NLAA. The pygmy rabbit, western yellow-billed cuckoo, Rabbit Valley gilia, and Mussentuchit gilia were given a determination of NCL. For detailed discussion on the effects determinations refer to the biological assessment.

Additional consultation with the USFWS would still be required for all implementation-level fire and fuels management activities if they would occur within suitable or potentially suitable habitat for federally listed species. The alternative Consultation Agreement to Implement Section 7 Counterpart Regulations could be for projects that support the National Fire Plan.

BLM Sensitive Species

In addition to RPMs designed to protect ESA-related species and their habitat, RPMs to protect BLM sensitive species have been included in the Proposed Action. The RPMs would provide assurance that an action would promote conservation of BLM sensitive species and their habitats, and that any action authorized, funded, or carried out by the BLM would not contribute to any special status species to becoming listed. RPMs would be implemented during wildfire suppression, prescribed fire, and non-fire fuel treatment activities, as applicable.

General Short-term Effects on ESA-related and BLM Sensitive Species

Despite the particular life history and habitat requirements of each special status species, some potential short-term effects can be generalized based on the types of fire management activities being proposed and general ecological principles. The items presented below include potential general impacts that could occur following implementation of the Proposed Action and the RPMs. RPMs are designed to minimize effects and prevent negative effects from becoming long term.

Wildfire suppression has the highest potential for negative effects on special status species because, the emergency nature of suppression action sometimes requiring quick response without detailed, site-specific data or analysis. In an emergency with human life or safety at risk, RPMs to protect resources may not be completely employed. ESR actions as a part of wildfire suppression events could mitigate or reduce the magnitude of potential impacts. Short-term impacts from fire suppression could include the following:

- Visual or auditory disturbance or displacement of individuals (affecting foraging, roosting, and/or reproductive behavior) from vehicles, heavy equipment, firefighters, and low-flying aircraft during wildfire suppression operations.
- Mortality or injury of adults, young, or eggs from smoke inhalation during firing operations, or from vehicles or equipment used during wildfire suppression operations.
- Mortality of adults, young, or larvae of aquatic species from using occupied water sources for wildfire suppression operations.
- Nest/den abandonment or mortality of young or eggs.
- Injury or mortality due to inadvertent strikes during aerial drops of fire retardant.
- Illness or mortality due to inadvertent chemical contamination of terrestrial or aquatic species' habitats during aerial applications of fire retardant.
- Heat stress or mortality to special status plants from firing operations.
- Crushing of special status plants, resulting in damage or mortality, from human foot traffic or use of vehicles or heavy equipment in wildfire suppression operations.
- Damage to the seedbank of special status plants from severe fire or mechanical disruption during wildfire suppression operations.
- Removal of key habitat components for nesting, denning, foraging, roosting, or cover due to equipment use or operational tactics, including the following:
  - Snag removal for safety reasons;
  - Tree and shrub removal and associated soil disturbance during fireline construction;
  - Vegetation removal and associated soil disturbance during helipad, base camp, or road construction;
  - Vegetation removal and soil disturbance during temporary road construction for access; and
  - Decreased water quantity for aquatic species from dewatering during low flow periods.
- Damage or loss of riparian or upland vegetation or downed woody debris, and increased surface run-off from wildfire suppression operations or emergency rehabilitation and stabilization activities, resulting in the following:
  - Decreased channel stability and alteration of channel morphology;
  - Increased erosion, sediment, and ash levels within and adjacent to the stream channel;
  - Increased water temperatures;
  - Degraded water quality (based on nutrient levels, temperature, and sediment levels);

    - Reduced riparian habitat, in-stream habitat cover, and woody debris that is typically necessary for properly functioning riparian areas and aquatic habitat;
    - Altered water velocities and substrate composition; and
    - Altered composition and decreased abundance of aquatic and terrestrial food sources.
- Increased risk of predation from removal of cover.
- Spread of disease or non-native, predatory species within previously uninfected water sources.
- Soil erosion of special status plant habitat following wildfire suppression operations.
- An increase in invasive plant species (from burning operations during wildfire suppression tactics) that could out-compete special status plant species.

RPMs would be incorporated into site-specific project plans for prescribed fire and wildland fire use. This would allow BLM to minimize or avoid many negative short-term effects to special status species. Wildland fire use would only occur if expected impacts to vegetation and other resources are acceptable and its use is restricted to only 5% of the planning area, hence impacts would be minimal.

Thus, the short-term effects on special status species that could occur from wildland fire use and prescribed fire would be mitigated, unlike those listed above for wildfire suppression, so effects would be minimized by the application of RPMs and site-specific measures outlined in an activity plan (in a Wildland Fire Implementation Plan, or Prescribed Fire Burn Plan).

Pre-planning and specific operational prescriptions for non-fire fuel treatments and RPMs would be incorporated into site-specific project plans and operations, as necessary. Visual or auditory disturbance from vehicles, heavy equipment, and human impacts to ESA and sensitive species from non-fire fuel treatments is expected to be minimal due the application of RPMs, site-specific planning, and the precise application of non-fire fuel treatments would allow avoidance of critical habitats or populations.

Short-term Effects on ESA-related and BLM Sensitive Species Habitat

Special status species have suitable habitat and are known to occur within all vegetation types in the Richfield planning area. Habitat for these species would be vulnerable to any of the impacts that are discussed in Section 4.2.13 (Vegetation). Because species occurrence records do not account for areas that have not been surveyed, unknown individuals or populations of a particular species may exist within any of these vegetation communities. RPMs have been incorporated into the Proposed Action that would address suitable habitat of unknown populations in each vegetation type.

Changes in the structure or composition of the vegetation communities can alter both the quality and quantity of various habitats for the federally protected species that occupy them. For impacts analyses to special status species, the baseline for each species is not a condition of "no wildland fires," but rather the current condition of the vegetation communities in which the species live, and the current risk of large, severe wildfire. The Vegetation section of this EA describes the FRCC, fire ecology, and current status of the vegetation communities on BLM-administered lands in Utah that, in turn, provide the basis for analysis of the Proposed Action. The list of habitat associations in Chapter 3 of this EA links the special status species that could be affected by the Proposed Action with each vegetation community.

In the following discussion, please refer to the list of specific effects, above, related to the specific actions that would occur.

Salt Desert Shrub, Sagebrush, Grassland: Species that are found within these habitats would be more likely than those found in many other habitats to incur short-term project-related impacts because these habitats are

relatively far-removed from their natural fire regime. Short-term impacts from implementation of fire management activities could consist of species mortality, temporary displacement, or habitat loss.

Pinyon and Juniper Woodland: Species that are found within pinyon and juniper woodland habitat would be more likely than those found in many other habitats to incur short-term project-related impacts because this habitat is relatively far-removed from its natural fire regime. In addition, species in this habitat would incur greater impacts because the expanse of this habitat type would decrease. Short-term impacts from implementation of fire management activities could consist of species mortality, temporary displacement, and habitat loss.

Mountain Shrub and Oak, Mixed Conifer, Ponderosa Pine: Species that are found within these habitats could incur short-term project-related impacts during fire management actions designed to maintain or lower the current FRCC. Short-term impacts could include mortality, temporary displacement, and habitat destruction.

Riparian/Wetland: Species that are found within riparian/wetland habitat could incur short-term project-related impacts during fire management actions, including mortality, temporary displacement, and habitat loss or destruction.

Aspen: Species found within aspen habitat could incur short-term project-related impacts during fire management actions. Short-term impacts from these fire management activities could result in mortality, temporary displacement, or habitat destruction.

Water: Direct effects on water and aquatic inhabitants could occur from wildland fire management activities. These could include the following: introduction of fire retardant, aviation fuel, or lubricants into streams and wetlands; erosion of exposed soils from fireline construction on steep slopes adjacent to streams; damaged riparian vegetation and soils (resulting in erosion) from the use of heavy equipment and establishment of fire camps; and reduced natural stream flow during drafting and pumping. These impacts would adversely impact water quality of various fisheries throughout the Richfield planning area.

The collective short-term impacts of increased sedimentation (from erosion) could have watershed-wide effects including changes in temperature, turbidity, and water chemistry. However, RPMs that were developed for riparian/wetland habitat and specific special status species would minimize the potential for short-term adverse impacts on aquatic species and their habitat.

Additionally, because RPMs would ensure limited acres of prescribed fire and would impose constraints on non-fire fuel treatments in and adjacent to riparian/wetland and water habitats, short-term adverse impacts from these fire management activities would be minimized or eliminated.

Long-term Impacts

General Long-term Effects on ESA-related and BLM Sensitive Species

The potential for short-term adverse impacts from the Proposed Action would be offset by long-term beneficial effects of rehabilitation activities, protected ecological resources (remaining after a suppression event), and reduction of fuels (following implementation of wildland fire use, prescribed fire, or a non-fire fuel treatment). The subsequent, gradual return to a more natural fire regime would result in long-term beneficial effects on species and habitat.

With suppression being implemented only when necessary, and wildland fire use, prescribed fire, and non-fire fuel treatments being used to minimize fuel loading, vegetation communities and wildlife habitats would transition over time to more closely reflect conditions associated with a habitat's natural fire regime. This would create a more balanced (diverse) and resilient ecosystem that would have a reduced threat of severe

wildland fire. This long-term beneficial effect would provide for greater species diversity in a more fire-tolerant ecosystem. If management activities were implemented repeatedly within the same treatment area (e.g., mechanical treatment followed by prescribed fire followed by seeding), populations could be displaced over the long term. However, to the extent that suitable habitat were available nearby, these impacts would be offset by the beneficial re-introduction of habitat conditions consistent with a natural fire regime.

Implementation of wildfire ESR actions and RPMs would minimize or prevent negative long-term effects to habitat quality or quantity. The following beneficial effects on special status species could occur from wildfire suppression:

- Federally protected species and their designated critical habitat could benefit from wildfire suppression actions that would prevent the loss of designated critical habitat or suitable habitat from severe wildland fires.
- Federally protected species and their designated critical habitat could experience positive effects of post-fire ESR efforts, and fuel reduction treatments.

Long-term adverse impacts on federally protected species and their designated critical habitat could occur from inadvertent mortality of individuals or long-term changes (alteration, removal, damage, or fragmentation) to suitable habitat components.

Pre-planning (including pre-project surveys and consultation with the USFWS) and implementation of RPMs would typically prevent mortality of individual species during prescribed fire and non-fire fuel treatment activities. These actions would minimize or prevent alteration of, damage to, removal of, or fragmentation of key habitat components within designated critical habitat or suitable habitats for special status species. Thus, negative long-term effects to species or suitable habitat would generally be avoided or limited in scope and/or intensity.

Conversely, when key habitat components were targeted for permanent change in structure or composition (e.g., restoration of altered habitats or historical Fire Regimes), long-term effects could be negative or beneficial for a species, depending on its particular habitat needs. Short-term effects could become long-term effects when a species has relatively few individuals, is extremely localized, is specialized in its habitat, or has a slow reproductive rate. Furthermore, direct mortality of individuals in small or endemic populations, or alteration of potentially suitable habitat, could cause long-term negative effects. Because prescribed fire and non-fire fuel treatments are typically localized, these actions would generally not affect wide-ranging species in the long term, unless they have a low reproductive rate.

Long-term effects could potentially benefit species' reproduction, numbers, or distribution, facilitating the return of a species to its historic range. Long-term beneficial effects to species could result from (1) decreased risk for large, severe fire events through fuels reduction and the gradual transition to a more natural fire regime, or (2) restoration of habitats that have been altered by either invasion of non-native species or long-term exclusion of fire (in fire-adapted vegetation communities).

4.2.7 WATER QUALITY

Short-term Impacts

Surface Water

Under the Proposed Action, the possibility of wildland fire use, more prescribed fire and non-fire fuels treatments could increase runoff, erosion, and stream temperatures. Nutrient concentration and turbidity may increase through increases in erosion and runoff,. There are no expected impacts on watershed drainage patterns.

An evaluation of potential impacts would occur through an environmental planning and review process for prescribed fire and non-fire fuel treatments that would consider impacts related to increases in surface runoff, soil loss, and sediment input to surface waters. These impacts would likely be short-term and conditions would return to pre-fire levels once vegetation was re-established. An evaluation of potential water impacts would be completed during the development of the WFIP for a proposed fire use project.

Figure 4.3 presents the location of 303(d)-listed waterbodies located in the planning area relative to FMUs categories. Most 303(d)-listed streams in the planning area are located in the Sevier River and Colorado River West watersheds, and are primarily located in FMUs where wildland fire is generally considered desirable (Categories C and D).

Wildland fire management activities would have minimal impacts on impaired waters due to compliance strategies for restoring or maintaining the restoration of water quality impaired [303(d) listed] waterbodies. RPMs would restrict activities in the vicinity of sensitive areas such as impaired waterbodies (i.e. 303(d)-listed) and drinking water sources in order to reduce further degradation of the surface water conditions. The Proposed Action would allow more flexibility in planned activities to manage hazardous fuels and would implement RPMs to reduce potential effects on water resources.

Groundwater

Wildland fire management activities would have minor impacts on groundwater quality. These impacts would result from altered water absorption patterns caused by a decrease in vegetation cover and from soil compaction caused by the use of mechanical equipment. Wildfires could temporarily reduce infiltration after a fire due to the formation of a hydrophobic soil layer. Altered water infiltration rates could also potentially temporarily increase or decrease the chemical levels (i.e., dissolved solids) in shallow aquifers (Gee et al. 1992, Allison et al. 1994). The impact on groundwater would be dependent upon the depth to groundwater below ground surface, and the type of sediment or bedrock the groundwater passes through. The change in the infiltration capacity of the soil would be dependent upon the fire's severity, soil type, and vegetation's ability to reoccupy the site following fire.

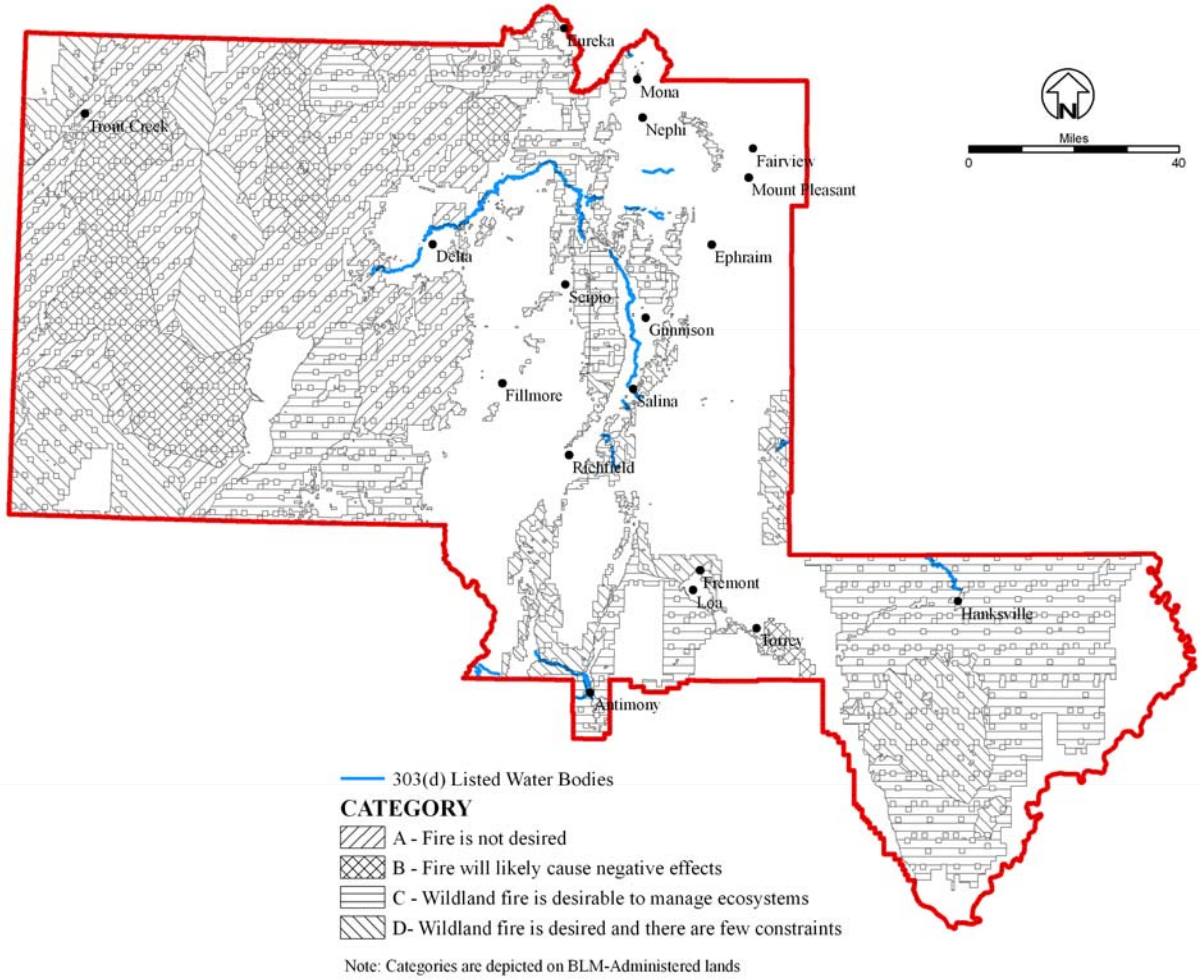
Long-term Impacts

Surface Water

Planned fire actions and eventual restoration of natural fire regimes under the Proposed Action would improve water resources by reducing the risk of high severity wildland fire, and promoting native vegetation types. The Proposed Action would also reduce erosion potential in the long term by fostering a healthy, native understory. The Proposed Action would allow more flexibility in implementing and timing planned actions that would protect water resources.

Wildfire suppression, wildland fire use, prescribed fire, and non-fire fuel treatments would result in smaller and less severe wildland fires over the long term. These smaller fires would have fewer impacts on stream flows and nutrient and sediment loads. A trend towards fewer severe wildfires would increase soil stability and enhance overall streambank and channel stability and Proper Functioning Condition of the watershed. Some areas would see a more sustainable supply of woody debris or streambank vegetation, which would also increase bank stability.

FIGURE 4.3: 303(D)-LISTED STREAMS AND FIRE MANAGEMENT CATEGORIES UNDER THE PROPOSED ACTION



Groundwater

Wildfire suppression, wildland fire use, prescribed fire, and non-fire fuel treatments would result in smaller and less severe wildland fire over the long term. This trend would result in reduced alteration of infiltration rates, and could cause more vegetation surface cover and root zone presence, and less fire-caused hydrophobicity. These properties would minimize damage to soil resources and adverse impacts to groundwater.

4.2.8 WETLANDS AND RIPARIAN ZONES

Short-term Impacts

The Proposed Action's RPMs would help to protect riparian and wetland resources. Under the Proposed Action, the burning of riparian and wetland areas would generally be avoided; however, low-intensity fires could be allowed to burn.

Short-term impacts of suppression activities could include vegetation damage or destruction, increased streambank and shore erosion, and increased sedimentation in streams, degrading fish habitat and water quality. The loss of streamside vegetation could result in an increase in stream temperature resulting in degradation of fish and other aquatic species habitat. Additionally, nonnative species found in the planning area generally recover faster then native species after a disturbance. These potential impacts on riparian areas would be minimized through use of RMPs and through the implementation of ESR actions following fire suppression actions.

Though wildland fire use could be employed in wetlands and riparian zones, it would be unlikely because of proposed RPMs. However, if wildland fire use was employed within these areas, impacts would be similar to those listed below for prescribed fire.

The use of prescribed fire and non-fire fuel treatments would increase under the Proposed Action from current levels. Vegetation disturbance associated with these actions would be evaluated through an environmental planning and review process that would consider impacts related to vegetation loss and increased erosion. Often these impacts are short-term and conditions return to pre-fire levels once vegetation is re-established. Efforts would be made to protect vegetation and restore native species after a disturbance.

Long-term Impacts

Wildfire suppression, wildland fire use, prescribed fire, and on-fire fuel treatments would collectively result in long-term beneficial effects on riparian and wetland areas. Overall, conditions would improve through the removal of undesirable vegetation, lessening the chances of high severity wildfire, and promoting the growth of native vegetation types.

Wildfires would be smaller and less severe resulting in fewer impacts on vegetation and sediment loads. A trend towards fewer severe wildland fires would increase soil stability and enhance overall bank and channel stability and Proper Functioning Condition of the watershed. Some areas would see a more sustainable supply of woody debris or streambank vegetation, which would also increase bank stability. Riparian areas would have fewer disturbances from severe wildfires, which would allow greater stability and increased functionality of floodplains, including decreasing the impact of flashfloods.

Planned fire management and fuels reduction actions under the Proposed Action would improve riparian resources and reduce erosion potential in the long term by fostering a healthy, native understory. The

Proposed Action would allow more flexibility in implementing and timing planned management actions that would protect water resources.

4.2.9 WILD AND SCENIC RIVERS

Short-term Impacts

Short-term impacts on eligble river segments resulting from wildfire suppression may include ground disturbances (e.g., hand lines) and would be minimized by following management guidelines for Wild and Scenic Rivers. Short-term and limited impacts for wildfire suppression could include disturbance to soils, watershed functions, vegetation conditions, and habitats for SSS and fish and wildlife. Those river segments within Category B FMUs would likely see more short-term impacts from suppression activities than those river segments in Category D FMUs. The AMR to a wildland fire would seek to minimize, when possible, adverse impacts or impairment of the values inherent to each river segment; it may include limiting the use of mechanical suppression activities, recommending smaller fire camps, or removing tracks and traces of fire suppression actions. Suppression efforts would not likely impact or impair the eligbility of river segments.

Impacts would also be minimized by ESR and other rehabilitation efforts. ESR activities, including seeding, would be prioritized within these areas to stabilize wildfire areas, minimize the threat of invasive and noxious weed species becoming established, and preserve the natural and unique values inherent to eligable river segments. ESR efforts may be noticeable after fire events as the areas become revegetated. Rehabilitation and restoration efforts would be designed, when possible, to avoid impairment of outstandingly remarkable values; therefore, they would not likely impact or impair a segment's eligability for designation as wild, scenic, or recreational.

Naturally-ignited wildland fires may be managed to accomplish specific resource management objectives for some FMUs. Such objectives are generally designed to have positive long-term impacts, though short-term impacts may include impaired air quality near or in river segments. Impacts on the quality of visitor experience would be limited to the duration (reduced visibility) and area of the fire (burned landscape) and would not likely affect overall use and appreciation of the unique values present within other portions of these designations.

Prior to approval and implementation, all planned management activities, including prescribed fires and non-fire fuel treatments, would undergo a site-specific environmental evaluation to consider impacts to eligible river segments.

Long-term Impacts

The Proposed Action would result in modification of current conditions toward a DWFC that would be more representative of the historical vegetation. The decreased risk of large severe wildfires is the primary long-term impact associated with the Proposed Action. A trend toward fewer undesirable fires would result from the progressive, metered removal of hazardous fuels. This trend generally would positively affect river segments by preserving their outstandingly remarkable values (especially those affected by vegetation changes).

By reducing hazardous fuels to restore natural ecosystems and by using fire to achieve DWFCs, the array of outstandingly remarkable values associated with Wild and Scenic River segments would be enhanced and preserved.

The Proposed Action would not alter the free-flowing nature of any river segment.

4.2.10 WILDERNESS STUDY AREAS

As shown in **Figure 4.4**, WSAs in the planning area lie within Category B, C, and D designated FMUs. There are no WSAs within suppression Category A lands. In all categories, management activities would be carried out in a manner that would not impair or minimize impacts on wilderness suitability of the areas.

Short-term Impacts

Short-term and limited impacts for wildfire suppression could include disturbance to soils, watershed functions, vegetation conditions, and habitats for special status species and fish and wildlife. Short-term impacts, though minimized by following management guidelines for WSAs, may still include: ground disturbances associated with suppression and control efforts (e.g. handlines); the natural character of an area; and reduced opportunities for solitude and primitive recreation. RPMs have been built into the Proposed Action to protect WSAs. WSAs within Category B FMUs would likely have more ground disturbing short-term impacts from suppression activities than those WSAs in Category C and D FMUs.

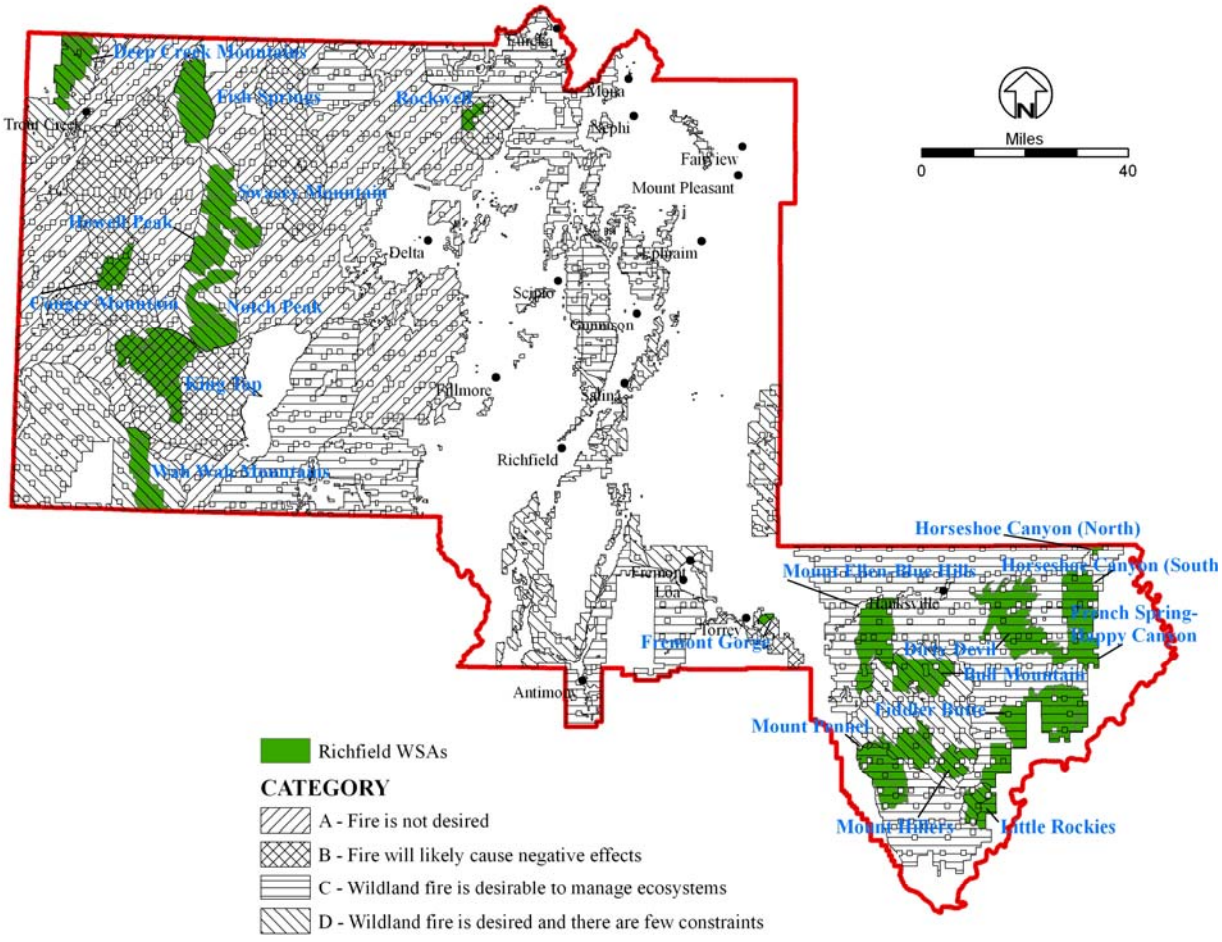
The AMR to a wildland fire would minimize adverse impacts or impairment to WSA values. Impacts would also be minimized by ESR and other rehabilitation activities. ESR and other rehabilitation activities, including seeding, would be used within WSAs to stabilize wildland fire areas, minimize the threat of invasive and noxious weed species, reduce erosion and to preserve the natural and unique values inherent to each WSA. ESR efforts may be noticeable after fire events as the areas become revegetated. Suppression and restoration efforts would be designed with resource specialist input, when possible, to avoid impairment of a WSA's suitability for wilderness designation.

Other short-term impacts may include temporarily impaired air quality and reduced visibility and aesthetics near or in WSAs. A burned or modified landscape and limited visibility may be aesthetically displeasing to recreationists, but these impacts on the quality of visitor experience would be limited to the duration and area of the fire and would not likely affect overall use and appreciation of the unique values present within other portions of these designations. Prior to approval and implementation, all planned management activities, including prescribed fires and non-fire fuel treatments, would undergo a site-specific environmental evaluation to consider impacts to WSAs. It is typically uncommon to have non-fire fuel treatments in WSAs.

Long-term Impacts

The Proposed Action would result in modification of current conditions to achieve DWFCs that may be more representative of the natural range of variation in vegetation FRCC and fuel load. The decreased risk of large severe wildfires is the primary long-term impact associated with the proposed action.. This trend would positively affect WSAs by preserving their wilderness suitability. By reducing hazardous fuels to restore natural ecosystems and by using fire to achieve DWFCs, the values and opportunities associated with WSAs would be enhanced and preserved.

FIGURE 4.4: WILDERNESS STUDY AREAS AND FIRE MANAGEMENT CATEGORIES UNDER THE PROPOSED ACTION



4.2.11 LIVESTOCK GRAZING

Short-term Impacts

A primary purpose of fire management actions on rangelands within the Richfield planning area is to reduce fuels and the cover of encroaching, undesirable vegetation species and decadent sagebrush stands. Multiple benefits would be obtained by fire and non-fire treatments. Increased production, nutrient quality and diversity, and palatability of herbaceous plants would result following a burn. Fire breaks up large tracts of sagebrush- and pinyon and juniper woodland-dominated landscapes, and establishes a mosaic of vegetation types. The creation of openings and more nutritious, palatable forage would attract livestock and result in shifts in livestock utilization and distribution patterns.

Under the Proposed Action, more acres of vegetation may be treated compared to the No Action Alternative. Following the post-treatment recovery period, an increase in production, nutrient quality, and palatability of herbaceous plants could occur.. Aggressive suppression would be used in areas susceptible to cheatgrass invasion and expansion, limiting impacts associated with invasive species.

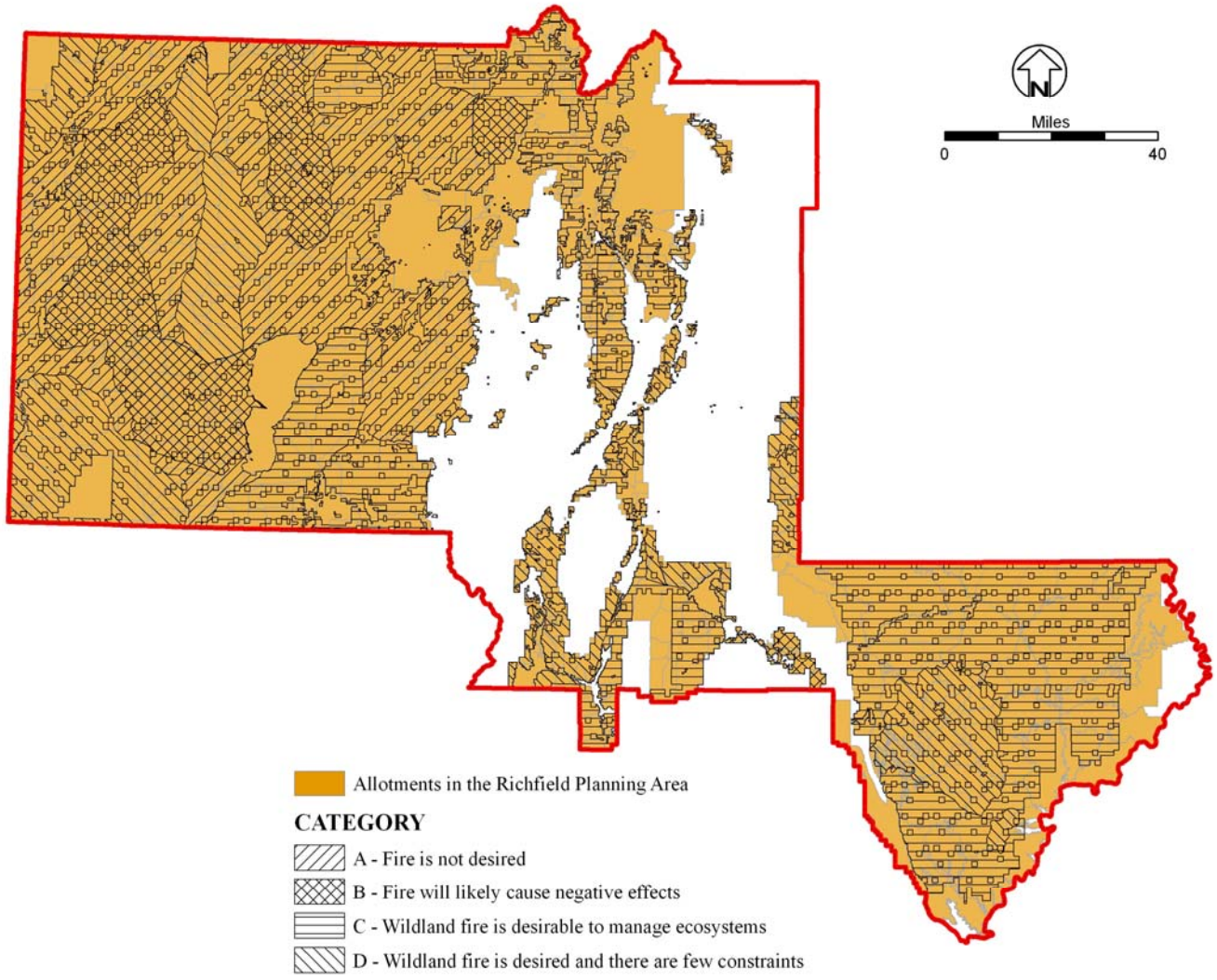
Following fire, a temporary loss of available forage would occur. Grazing would be curtailed on the impacted areas for a minimum of one growing season, or a minimum of two growing seasons if the rangeland has been reseeded. This could cause negative economic impacts on the permittee, and could cause the need to find alternative grazing or feeding arrangements. The need for livestock management on a burned area is most critical in the first growing season after fire, particularly in plant communities of arid and semiarid regions (Trlica 1977). If livestock had premature access to the burn, the full benefits of fire on restoring the fire adapted plant community would not be realized, and further negative impacts could occur (Bunting et al. 1987).

Figure 4.5 presents the locations of the grazing allotments relative to fire management categories. Because most BLM-administered lands within the planning area are part of an allotment, the percentage of allotments falling into Categories A-D is basically the same as percentages of Categories A-D occurring within the planning area.

Under Proposed Action, approximately 29 percent of grazing allotments fall into Category A, 14 percent in Category B, 36 percent in Category C, and 21 percent in Category D. The majority of grazing allotments are located in areas where wildland fire management goals would be focused on allowing wildfire to play its natural role (with some constraints). The acres of land where wildland fire would not be desired (29 percent of grazing allotments) are predominantly located in the western portion of the planning area, where the threat of invasive grass establishment exists. The Proposed Action would allow continued control of undesirable vegetative species that have the potential to expand their range following fire, while allowing wildland fire use, prescribed fire, and non-fire fuel treatments in areas where the risk of expansion is lower and resource benefits would be realized.

Prescribed fire actions and non-fire fuel treatments would be coordinated with the grazing permittees in an effort to reduce impacts from the loss of grazing use. A net benefit to desirable vegetation composition following prescribed fire would occur following the recovery period. Pre-fire rest from grazing would be required on many range sites in order to allow the accumulation of enough fine fuel to carry a prescribed fire. This would be particularly important in mountain shrub and pinyon and juniper woodland vegetation types as well as in forested areas (e.g., mixed conifer), especially aspen ecosystems where grass and shrub litter could be the main carrier fuels (Jones and DeByle 1985).

FIGURE 4.5: GRAZING ALLOTMENTS AND FIRE MANAGEMENT CATEGORIES UNDER THE PROPOSED ACTION



Non-fire treatments, including mechanical actions and seeding where a vegetation composition change is desired, would impact permittees by eliminating grazing from an allotment for a minimum of two years. Post-recovery use of the grazing allotment would improve through more abundant and diverse forage resources.

Long-term Impacts

Under the Proposed Action, long-term would be expected to make grazing resources more productive and stable. The removal of hazardous fuels would reduce the risk of severe wildfires. This would decrease the likelihood of longer recovery periods for impacted allotments. Prescribed fire and non-fire fuel treatments would affect a similar trend toward increases in ecosystem health and stability, result in improvement of grazing resources, and a reduction in the potential for longer recovery periods. This would be particularly evident in FMUs with cheatgrass infestation problems.

4.2.12 WOODLANDS AND FORESTRY

Short-term Impacts

Under the Proposed Action, more acres of vegetation could be treated, decreasing the amount of biomass, timber, firewood, and pinyon nut harvesting opportunities in the areas affected. In the short term, the change in suppression efforts would not reduce the acreage of pinyon and juniper woodland enough to noticeably reduce the availability of woodland products.

The use of non-fire fuel treatments to reduce the occurrence of younger age classes in areas of old growth could increase the survivability of old growth forests during fire events (Howard 2003). This could increase the availability of higher economic value forest products, particularly in mixed conifer and ponderosa stands. The planting of ponderosa pine seedlings would increase the rate of ponderosa pine establishment.

Long-term Impacts

Long-term impacts from the Proposed action could include a reduction in the acres of pinyon and juniper woodland. This would not noticeably decrease the availability of biomass and firewood collection in this vegetation type and this impact would be even less pronounced in other forested areas.

Prescribed fire and non-fire treatments would initially result in an increase in the opportunity for the harvesting of biomass and firewood; however, a trend toward less biomass availability would eventually occur. The use of non-fire fuel treatments to reduce the occurrence of ladder fuels in areas of desirable old growth forests, particularly ponderosa stands, would also decrease potential fire severity and increase the survivability of old growth forests during fire events (Howard 2003). This would increase the availability of higher economic value forest products, particularly in mixed conifer and ponderosa stands. The use of seeding and the planting of seedlings would increase the occurrence of desirable forest and woodland types. The planting of ponderosa pine seedlings would increase the rate of ponderosa pine establishment.

4.2.13 VEGETATION

Short-term Impacts

The FMU categories and their relationship to vegetation are displayed on **Figure 4.6**. **Table 4.1** shows the percentage of each of the GAP vegetation types in each FMU category. Effects are described under each vegetation type (mountain shrub and oak discussions are together due to similarity of treatments and effects). For all vegetation types, wildfire suppression actions have the potential to disturb small amounts of vegetation due to fireline construction or other ground-disturbing suppression actions. Additionally, there will be impacts to vegetation from the fire itself (wildfire, wildland fire use, or prescribed fire).

TABLE 4.1: PERCENT OF VEGETATION TYPE AND FIRE MANAGEMENT UNIT CATEGORY UNDER THE PROPOSED ACTION

Vegetation Type Groups	Fire Management Unit Category			
	A	B	C	D
Salt Desert Shrub	51%	12%	28%	9%
Sagebrush	4%	29%	40%	27%
Pinyon and Juniper Woodland	1%	11%	41%	47%
Grassland	8%	13%	58%	21%
Ponderosa Pine	0%	2%	48%	51%
Mountain Shrub	0%	1%	34%	65%
Oak	0%	0%	36%	64%
Mixed conifer	0%	0%	21%	79%
Aspen	0%	0%	5%	95%

Salt Desert Shrub

Because noxious weed and cheatgrass invasion are the main reasons that the vegetation type is in FRCC 2 or FRCC 3, applying the AMR and post-wildfire ESR actions would improve the conditions and possibly reduce the FRCC.

Very little of this vegetation type occurs (i.e., only incidental, isolated salt bush patches) in areas where prescribed fire would be considered. Consequently, the damaging effects (e.g., invasion of noxious weeds and a lack of post-fire regeneration) fire has on this vegetation type would be avoided. When planned carefully, fire and follow-up rehabilitation and restoration would also reduce the risk of non-native species invasion.

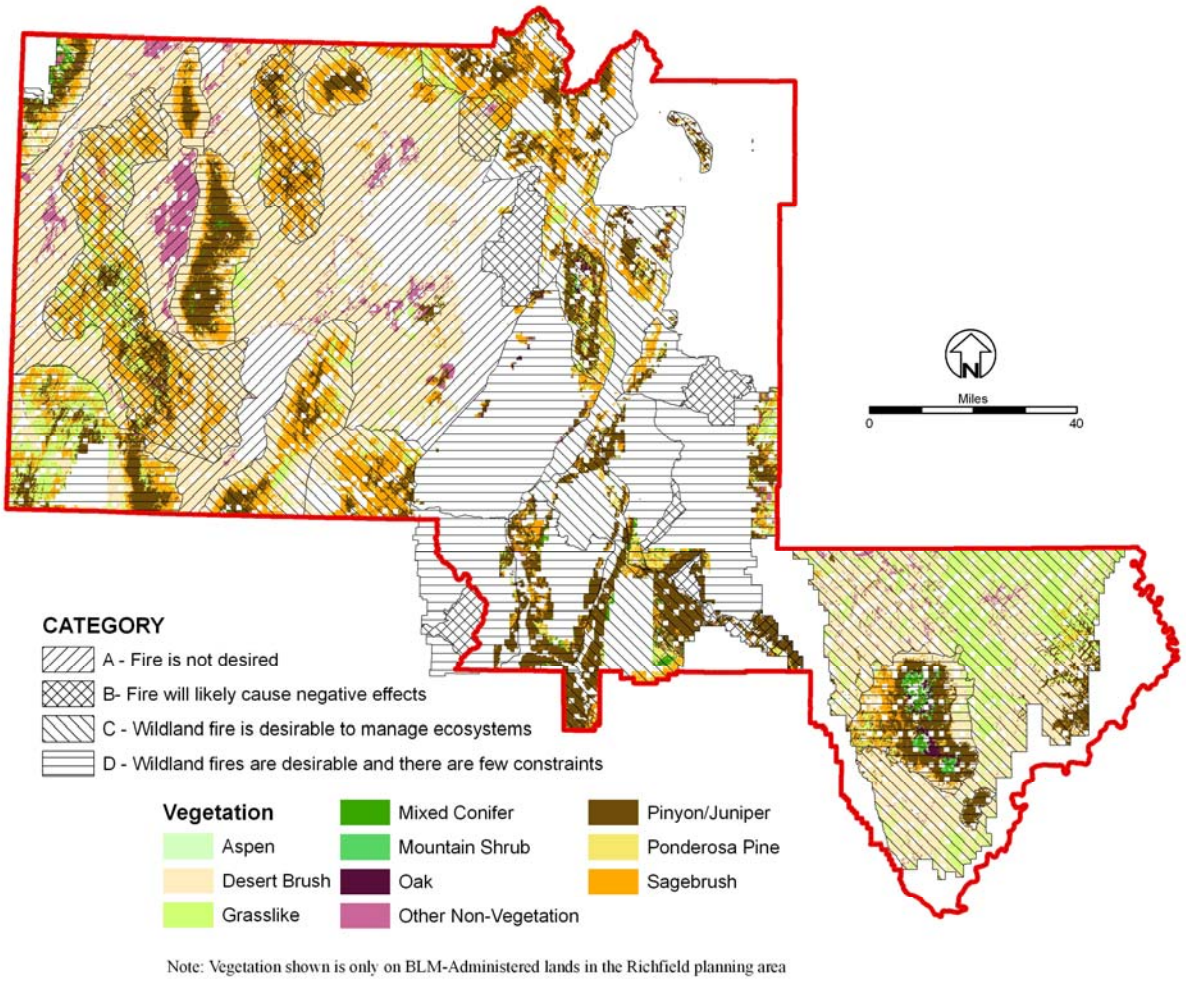
Non-fire fuel treatments could be used to effectively reduce cheatgrass invasion in this vegetation type. Because noxious weed and cheatgrass invasion are the main reasons that the vegetation type is in FRCC 2 or FRCC 3, non-fire fuel treatments would improve the conditions and reduce the FRCC.

Sagebrush

Prescribed fire may be used to reduce crowded and decadent sagebrush and encourage seedlings to sprout (Paysen et al. 2000). RPMs to avoid and reduce invasive species and noxious weeds following prescribed fire would reduce the amount of cheatgrass in these areas. Non-fire fuel treatments could be used effectively to reduce the cheatgrass invasions occurring in these vegetation types. Because noxious weed and cheatgrass invasion are the main reasons that the vegetation type is nearly all in FRCC 3, follow up non-fire treatments could help to improve the conditions and possibly reduce the FRCC.

Although basin big sagebrush, Wyoming big sagebrush, and mountain sagebrush do not re-sprout after fire, these species are prolific producers of seed and if a seed source is present, re-establishment after fire is quite rapid. Many historic sagebrush/grass communities have become ingrown with pinyon/juniper communities due to fire exclusion. See the write up below, which applies to that current vegetation type.

FIGURE 4.6: VEGETATION TYPES AND FIRE MANAGEMENT CATEGORIES UNDER THE PROPOSED ACTION



Note: Vegetation shown is only on BLM-Administered lands in the Richfield planning area

Pinyon and Juniper Woodland

This vegetation type is largely in FRCC 3 (68 percent) mainly due to encroachment of juniper into grassland or sagebrush types from fire exclusion and a lack of native understory vegetation. This ingrowth contributes to a steady increase in crown fuels, creating a different fire regime which can burn in a large severe wildfire on high and extreme fire days. Prescribed fire and wildland fire use would reduce acres of juniper encroachment and reduce the density of pinyon and juniper woodlands. Prescribed fire would be lethal to many small or young juniper trees, allowing the ecosystems with deeper soils to return to sagebrush and grass, towards the DWFC in both the short and long terms.

Non-fire fuel treatments would reduce densities of juniper and pinyon, improve understory vegetation, and would consequently reduce fuel loads. These treatments would also likely reduce invasion of cheatgrass.

The remaining 32% of pinyon and juniper woodlands are typically on shallow, rocky, drier soils. They usually have sparse understories and widely spaced crowns which are unlikely to carry a crown fire very far. These ecosystems are likely in FRCC1, with a much longer fire return interval.

Grasslands

In the short term, lack of fire in FRCC 3 and FRCC 2 areas of this vegetation type with existing or potential invasive species (primarily areas below 7,000 feet in elevation) would help to limit further degradation due to cheatgrass invasion and expansion. ESR efforts would further help to limit cheatgrass invasion and expansion and start to trend these areas toward lower FRCCs.

Prescribed fire and wildland fire use (primarily areas above 7,000 feet in elevation) would help to trend this vegetation type toward a lower FRCC and reduce encroachment by juniper and other encroaching species. Non-fire fuel treatments would also help to prevent further expansion of juniper and trend this vegetation type toward a lower FRCC.

Ponderosa Pine

All of this vegetation type in the Richfield planning area is in FRCC 3. Wildfires during the hottest months of the year pose the greatest threat to this vegetation type as there is so much encroaching understory fuel it is likely that a wildfire would be fatal to the large, old Ponderosa pines. Seeding and tree planting following fire could restore and rehabilitate extremely burned areas.

Generally, fires would benefit ponderosa pine, except when fuels or weather conditions would result in the most severe fire effects. The use of prescribed fire and non-fire fuel treatments in FRCC 3 areas would help reduce excessive fuel loadings prior to the re-introduction of fire as a management tool. Reintroducing wildland fire use would also reduce encroachment by juniper.

Mountain Shrub and Oak

Many species in the mountain shrub vegetation type can re-sprout or reseed following fire, and effects of fire on the vegetation type would be a reduction of available fuels, and increased age-class and species diversity. Non-fire fuel treatments would reduce fuel loadings in this vegetation type, reduce the risk of cheatgrass invasion, and increase age-class diversity. RPMS to reduce invasive species would reduce the risk of cheatgrass invasions

Mountain shrub and oak types are at high risk of cheatgrass invasion following fire if it occurs below 7000 feet elevation. ESR actions following wildland fire would reduce the risk of cheatgrass invasion following fire.

Mixed Conifer

The mixed conifer type frequently benefits from fire as it is fire adapted. Long term effects of fire exclusion on this type include an increase in fuel loadings and tree density. These effects decrease the nutrients and water available to remaining plants, and increase the severity of future fires.

Wildland fire use and prescribed fire would be employed to reduce fuel loading and densities on mixed conifer sites. Effects from wildland fire use and prescribed fire would be much different than those identified for wildfire suppression. Non-fire fuel treatments would reduce fuel loadings in this vegetation type, and reduce the risk of noxious weed and cheatgrass invasion.

Aspen

Aspen is fire adapted and needs fire every 50-100 years to meet DWFC. Most of this vegetation type is currently in FRCC 3 due to increased fuel loading and encroachment from mixed conifer stands. The Proposed Action, would likely cause aspen to increase in acreage. Approximately 95 percent of this vegetation type would be in Category D FMUs, and FRCC would gradually be reduced with the re-introduction of fire.

Conifer encroachment into aspen would be reduced due to wildfire, wildland fire use and prescribed fire. Aspen stands would regenerate to aspen through suckering if not over used by ungulates post-treatment. Non-fire fuel treatments would reduce fuel loadings in this vegetation type. All treatments would promote aspen suckering.

Long-term Impacts

All Vegetation Types

All vegetation types would exhibit long-term reductions in hazardous fuels, risk of invasion from noxious weeds and cheatgrass, and density from the Proposed Action. Overall, this would result in a trend toward FRCC1 and trends toward DWFC across the planning area. Many of these long-term effects may be the result of ESR actions and by following RPMs described as part of the Proposed Action.

Where management actions occur, a long-term improvement in FRCC would result in less risk of wildfires burning outside their natural range of variability (in terms of fire behavior, size, severity, and frequency). More natural fire regimes (fire return interval and severity) would benefit all fire adapted vegetation types found in the Richfield planning area.

By implementing the Proposed Action Alternative, vegetation conversions would be expected. For example, by removing encroaching juniper, some expansion of the sagebrush and grassland cover types would occur, and pinyon/juniper woodlands would decrease. Vegetation conversions toward DWFC would result in more sustainable ecosystems.

4.2.14 FISH AND WILDLIFE

Short-term Impacts

RPMs (**Appendix E**) would minimize or eliminate adverse effects on species and habitat. RPMs (e.g., scheduling non-fire fuel treatments outside of the nesting season for raptors) would be implemented for all fire management actions, as applicable. The following discussion describes potential effects on species and habitat.

Fish

RPMs included in the Proposed Action would limit the potential for impacts on fisheries and aquatic resources. However, direct effects could occur from wildfire suppression activities, including the possible, but unlikely introduction of fire retardant, aviation fuel, or lubricants into streams and wetlands; erosion of exposed soils from fireline construction on steep slopes adjacent to streams; damaged riparian vegetation and soils (resulting in erosion) from the use of heavy equipment and establishment of fire camps; and reduced natural stream flow during drafting and pumping. These impacts would adversely impact water quality of the various fisheries throughout the Richfield planning area. The collective short-term impacts of increased sedimentation (from erosion) could have watershed-wide effects including changes in temperature, turbidity, and water chemistry.

Non-game and Big Game Species

Short-term adverse impacts (e.g., direct mortality, habitat destruction, and displacement) on non-game and big game species would be minimized by RPMs, as well as rehabilitation, stabilization, and restoration activities that would be conducted, as practical and necessary, in treatment areas. However, fire management activities could still result in short-term adverse impacts. These impacts would likely affect suitable habitat used by raptors, migratory birds, small mammals, carnivores, amphibians, reptiles, and a variety of big game species.

Direct effects from wildfire suppression activities could include damaged vegetation (including forage resources) from the use of heavy equipment and establishment of fire camps, and weed invasion. Direct effects from prescribed fire, wildland fire use and non-fire fuel treatments could include modification or destruction of forage or prey resources, habitat alteration or damage, and species displacement.

In addition to direct impacts, indirect impacts could include changes in the survival or successful reproduction of aquatic prey species due to increased sedimentation and subsequent habitat modification as a result of upstream erosion.

Long-term Impacts

In the long term, overall hazardous fuels reduction would gradually reduce the risk of a severe fire event and restore an ecosystem that reflects a more natural fire regime. Therefore, the net effects of the Proposed Action on fisheries and wildlife would be beneficial.

Restoring historical habitats and native plant species, and enhancing, maintaining, and protecting ecological resources (goals of the Proposed Action) would result in long-term, beneficial effects.

4.2.15 SOILS

Short-term Impacts

Under the Proposed Action, more acres of BLM-managed land would be affected by wildland fire use, prescribed fire, and non-fire fuel treatments. Uncharacteristic wildfire could cause a reduction in porosity and structure which could result in lower infiltration rates and increased erosion and runoff (Ralston and Hatchell 1971). RPMs would minimize direct effects on soil health (such as the loss in soil structural stability or soil compaction), and would address indirect impacts associated with soil loss and the potential for sediment loading and sedimentation. Erosion controls and revegetation could be proposed as post-fire treatments that would contain and control soil loss, and would serve to stabilize these sites.

Aggressive initial attack would be used where expected fire severity could adversely impact sensitive soils. Some level of ground disturbing activities associated with suppression activities would likely occur regardless of AMR being implemented.

Long-term Impacts

Wildfire suppression and associated ESR, wildland fire use, prescribed fire, and non-fire fuel treatments would result in a trend toward less severe wildfires and fewer negative impacts on soil quality, including microbial and mycorrhizal communities, soil temperatures, and chemical and physical structure of the soil. The flexibility of the Proposed Action would allow for aggressive suppression in areas with sensitive soils where fire's effects are expected to be severe.

Planned fire management and fuel reduction actions, under the Proposed Action, would be implemented to improve the soil resources and reduce erosion potential in the long term by fostering a healthy, vegetative understory. Planned actions of prescribed fire and non-fire fuel treatments under the Proposed Action would continue to reduce the likelihood of severe wildfires that would result in soil structure loss and altered porosity and infiltration rates. As fire returns to a more natural pattern, there would be fewer indirect impacts from large, severe wildfires including potential sedimentation of streams and reservoirs from wind and water erosion, and fugitive dust from wind erosion.

4.2.16 SOCIOECONOMICS

Short-term Impacts

In the short term, forest product values, allotment permittees, could be adversely affected by wildland fire, prescribed fire, and non-fire fuel treatments. Fires would create temporary decreases in air quality and displace livestock from foraging areas. Fire suppression activities and wildland fire use could cause ranchers to have a temporary loss of income due to land that could not be used during, or within one to two years after, a wildland fire or fire treatment. Altered transportation routes, disruption of subsistence activities, and temporary increases in noise could also be short-term effects. Short-term beneficial effects could include an increase in revenue for communities from increased utilization of local services during suppression activities and treatments.

Long-term Impacts

Long-term beneficial effects could include a reduction in the cost of suppression, increased use of contractors for fuel reduction projects, and reduced risk to WUI areas and associated resource values and infrastructures. A decreased long-term potential for severe wildland fire would lead to increased firefighter and public safety, and a reduction in property loss (from a severe fire event) and suppression expenses.

Impacts from fire or treatment actions would also be beneficial for livestock and wildlife, resulting in an increase in the quantity and quality of forage. Over time, there would likely be fewer economic losses in the Richfield planning area from large-scale, severe wildland fires. The subsequent decrease in fires that could otherwise cross landownership boundaries onto private and county-owned land would result in an overall increase in safety for the public.

4.2.17 WILDERNESS CHARACTERISTICS

Short-term Impacts

As shown in **Figure 4.7**, lands with, or likely to have, wilderness characteristics are found within Category B and D FMUs. Less than 5% of the BLM-administered lands have or are likely to have wilderness

characteristics. Thus, a various array of fire management strategies would be applied in different areas. There are no lands with, or likely to have, wilderness characteristics found within Category A FMUs. In all categories, management activities would be carried out in a manner that would minimize impacts on wilderness characteristics.

RPMs have been built into the Proposed Action to protect the physical resources (e.g., soil, water, SSS, and cultural resources) within these areas. Impacts to these physical resources are discussed in their respective sections. Those lands with wilderness characteristics located within Category B FMUs would likely see more short-term impacts from suppression activities than those found in Category D FMUs. Impacts would be related to impairment of naturalness and opportunities for solitude and primitive recreation.

Short-term impacts resulting from management response to wildfire could include ground disturbances associated with suppression and control efforts (e.g. handlines). Short-term and limited impacts for wildfire suppression could include disturbance to soils, watershed functions, vegetation conditions, and habitats for special status species and fish and wildlife.

Seeding would be used within these areas to stabilize wildfire areas, minimize the threat of invasive and noxious weed establishment, and preserve the natural and unique values inherent to these areas. A short-term and minor impairment of wilderness characteristics could occur due to suppression-related activities. ESR efforts may be noticeable after fire events before they are revegetated, impacting the naturalness of the area. as the areas become revegetated. A short-term and minor impairment of wilderness characteristics would occur due to suppression and ESR related activities.

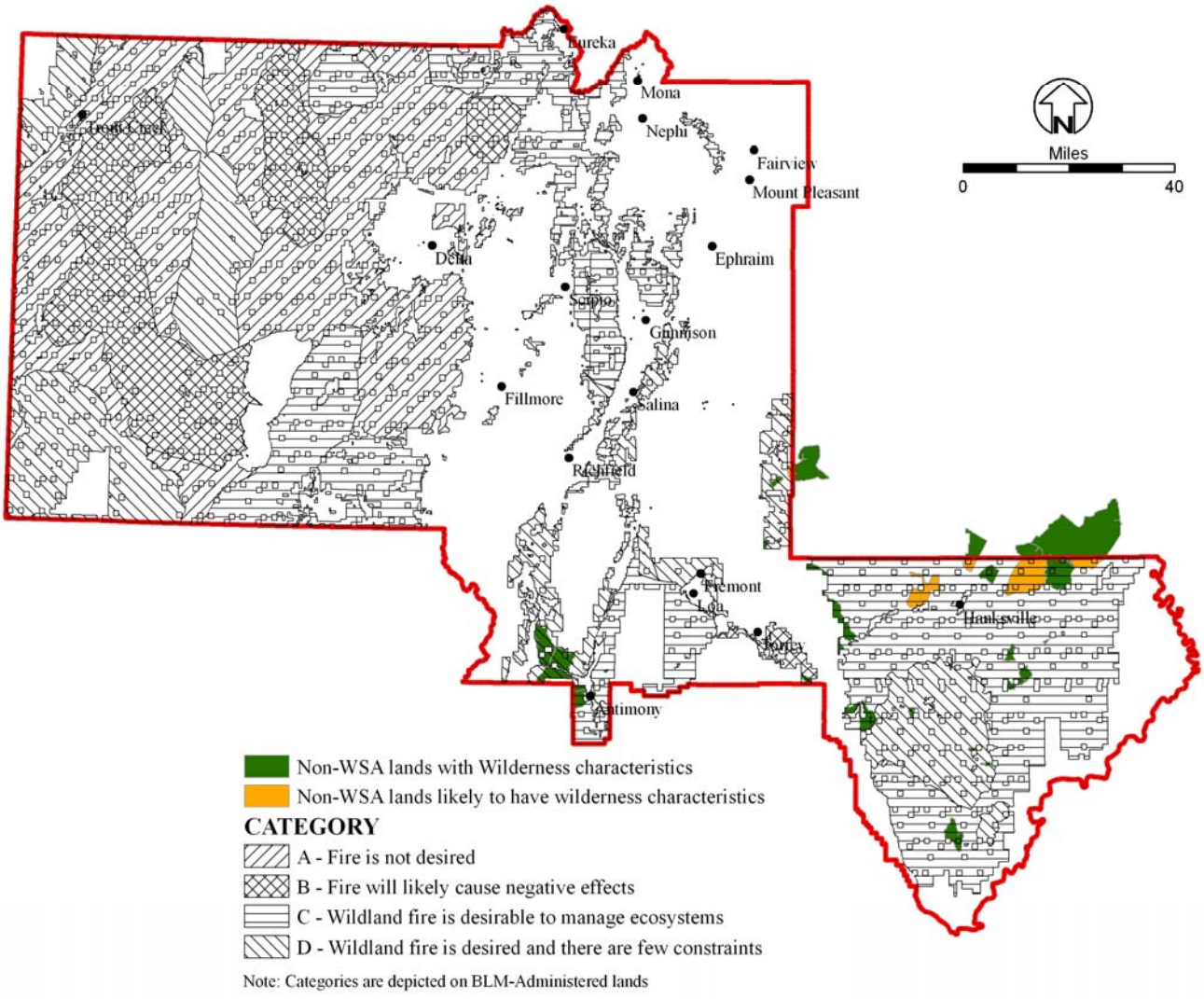
A burned or modified landscape and limited visibility may be aesthetically displeasing to recreationists seeking naturalness and opportunities for solitude and primitive recreation, but these impacts on the quality of visitor experience would be limited to the duration and area of the fire and would not likely affect overall use and appreciation of these or adjacent areas. Unique values are present within other portions of these designations.

All planned management activities, including prescribed fires and non-fire fuel treatments, would undergo a site-specific environmental evaluation to determine potential impacts to the resource prior to being approved. Methods used to implement these fire management actions would be of minimal impact to the resource being protected. Prescribed fire would help maintain the naturalness of these areas by achieving the DWFC. Prior to approval and implementation, all planned management activities, including prescribed fires and non-fire fuel treatments, would undergo a site-specific environmental evaluation to consider impacts to recreation.

Long-term Impacts

The Proposed Action would result in modification of the current condition toward a DWFC that may be more historically representative of the historical natural vegetation cover. A decreased risk of large, severe wildfire events is the primary long-term impact associated with the Proposed Action. The removal of fuels and reduced risk of severe wildfire would preserve WSA's naturalness, and opportunities for solitude and primitive recreation. Therefore, the Proposed Action would benefit lands with wilderness characteristics.

FIGURE 4.7: NON-WSA LANDS (WITH/OR LIKELY TO HAVE) WILDERNESS CHARACTERISTICS AND FIRE MANAGEMENT CATEGORIES UNDER THE PROPOSED ACTION



4.2.18 MITIGATION MEASURES

RPMs under the Proposed Action would minimize or avoid impacts on resources. No mitigation for impacts would be necessary because of the protection already afforded by the RPMs.

4.2.19 RESIDUAL IMPACTS

No mitigation measures are proposed with the Proposed Action, therefore, no residual impacts would occur.

4.2.20 MONITORING AND COMPLIANCE

To ensure an adaptive management response to fire planning needs within the state, monitoring measures and compliance with the goals and objectives of this plan would be maintained. This would be achieved through future planning associated with fire management implementation actions. These fire management actions would be evaluated for adherence to the goals and objectives established by this Proposed Action, as well as specific resource requirements contained within the appropriate LUPs. Wildland fire impacts would be compared to FMP goals and, if necessary, revisions to the FMP would be incorporated to reflect the impact of wildland fire events on the planning area resources. Implementation-level fire management actions would be developed to meet resource requirements and could include additional monitoring to evaluate and ensure conformance to plan-level decisions. The frequency and duration of monitoring would be determined on a case by case basis.

4.3 NO ACTION ALTERNATIVE

4.3.1 AIR QUALITY

Short-term Impacts

The No Action Alternative mandates suppression of wildfires, with no wildland fire use, and very limited prescribed fire and non-fire fuel treatments.

Figure 4.8 presents the location of NAAs and Class I areas located in the area of consideration for the planning area with fire management categories categorized by relative desirability of fire (Categories A through C). Under the No Action Alternative, substantially fewer areas where fire has been determined to be desirable (Categories C) are specified and none are adjacent to NAAs or Class I areas. Approximately 395,730 acres of Category C BLM-administered land are located within 100 kilometers of a Class 1 area or NAA. Short-term impacts of the No Action Alternative such as smoke from wildfire would continue at current levels. There is a strongly upward trend in number of acres burned by wildfire in the last 20 years for the planning area. This is expected to continue through the next five years. Typically, wildfires produce more smoke over more days than an equivalent number of acres treated by other methods.

Due to the lack of wildland fire use, and the limited use of prescribed fire and non-fire fuel treatments in the No Action Alternative, short-term impacts on air quality from these activities (such as short-term smoke emissions and fugitive dust) are likely to be less than for the Proposed Action. Similar to the Proposed Action, the No Action Alternative dictates the use of standard operating procedures including participation in the Utah Interagency Smoke Management Program, and would minimize potential air quality impacts. Applicable federal, state, tribal, and local air quality regulations would not be violated due to activities planned by BLM.

Long-term Impacts

Under the No Action Alternative, aggressive suppression coupled with less fuel treatment would result in a trend toward more severe and uncontrollable wildfires. These fires have the potential to create more smoke emissions than smaller controlled fires and would not be timed to minimize impacts on air quality conditions. Increased pollutant concentrations, and impacts on NAAs and other sensitive areas from these large severe wilfires could increase. Impacts on human health would also increase, particularly from exposure to particulate matter, with some events likely requiring the public to take special precautions to protect the health of sensitive people.

4.3.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Figure 4.9 shows that, under the No Action Alternative, the majority of ACECs are found in Category A fire management category, where wildland fire is not desired. Only the Beaver Wash Canyon ACEC is located in a Category B fire management category.

Short-term Impacts

Existing management, which would be continued under the No Action Alternative, would include an emphasis on suppression, no wildland fire use, and limited acres of prescribed fire and non-fire fuel treatments. The impacts from these actions would not differ greatly in the short term from those described in the Proposed Action. The increased emphasis on suppression could lead to more severe short-term impacts than those anticipated by the Proposed Action. Conversely, the greater focus on suppression efforts could potentially decrease the amount of ACEC acres that burn in the short term.

The lower amount of prescribed fire and non-fire fuel treatments could give the impression of a more natural environment to the public, when the lack of these treatments would actually result in the build up of hazardous fuels and a further deviation from DWFC.

Long-term Impacts

Because wildfire suppression would be used more, and prescribed fire and non-fire fuel treatments would be used less, under the No Action Alternative, the trend toward heavier fuel buildups in and around ACECs would continue. If heavy fuel loads were ignited, a high temperature, high severity fire could damage historic, cultural, botanical, riparian, or scenic values associated with ACEC designations. By excluding fire from playing its natural role in ecosystems, the No Action Alternative is counter to managing areas for naturalness.

FIGURE 4.8: NON-ATTAINMENT AREAS AND CLASS I AREAS AND FIRE MANAGEMENT CATEGORIES UNDER THE NO ACTION ALTERNATIVE

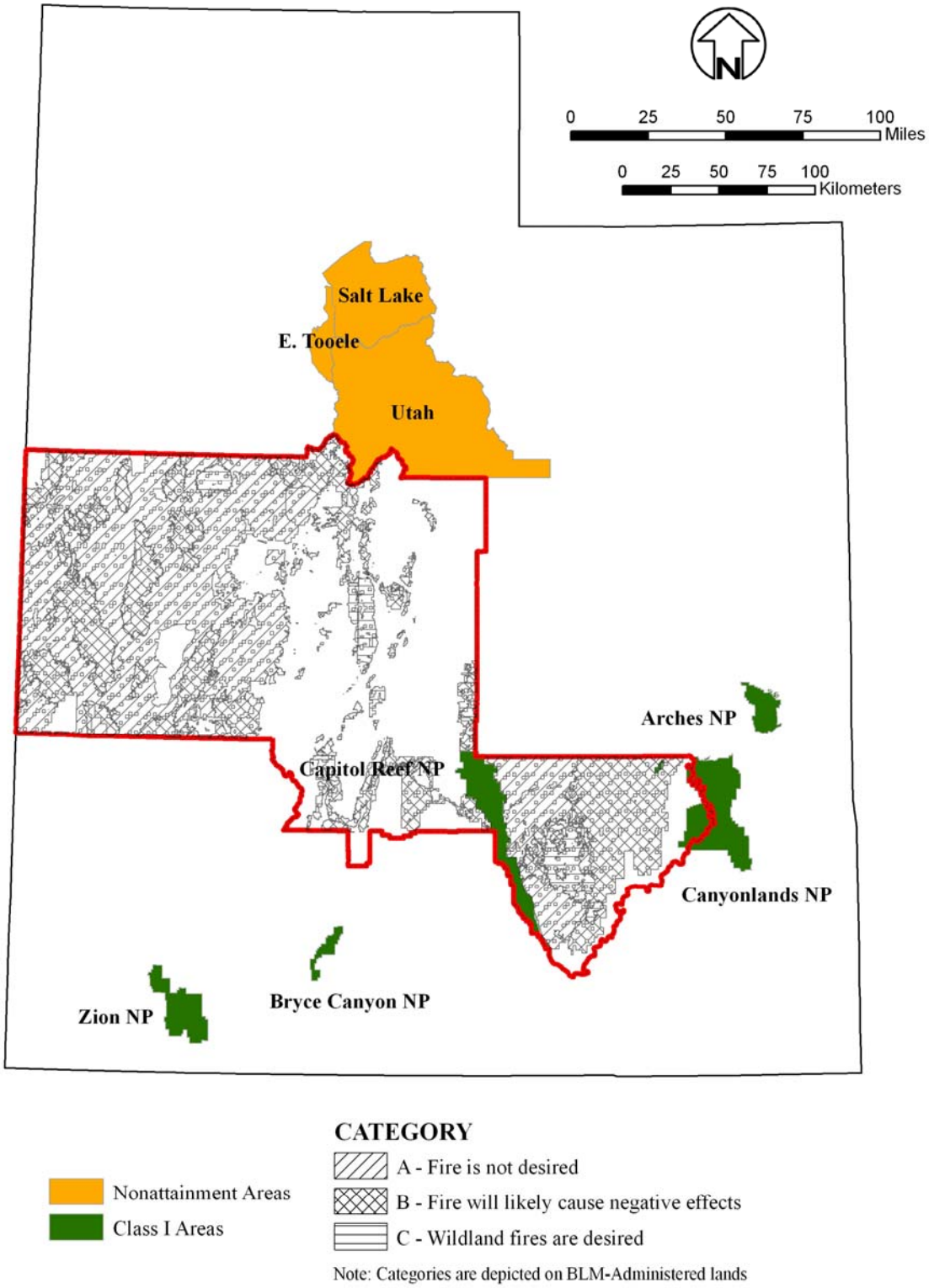
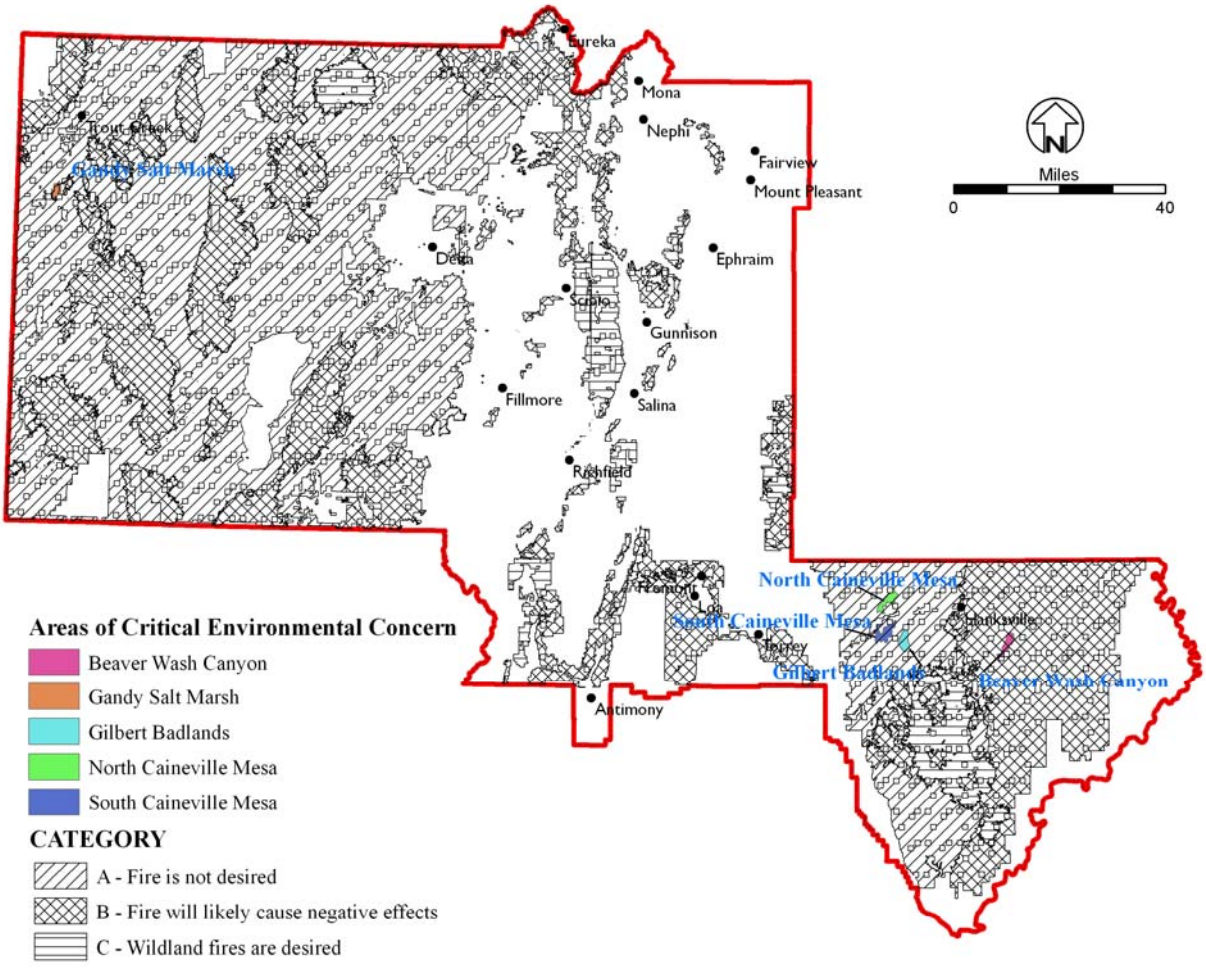


FIGURE 4.9: AREAS OF CRITICAL ENVIRONMENTAL CONCERN AND FIRE MANAGEMENT CATEGORIES UNDER THE NO ACTION ALTERNATIVE



4.3.3 CULTURAL RESOURCES

Short-term Impacts

Under the No Action Alternative, short-term impacts from fire management activities would be similar to those described for the Proposed Action. However, under the No Action Alternative, more wildfire suppression and no wildland fire use would have a lower potential for heat- and duration-related impacts. More impacts would be possible in the No Action Alternative, due to ground disturbing suppression efforts performed to meet the No Action Alternative suppression goals. However, those impacts would be more localized if initial suppression efforts are successful. Both prescribed fire and non-fire fuel treatments would have less potential for impacts since those actions are less in the No Action.

Long-term Impacts

Under the No Action Alternative, the trend toward heavier fuel buildups around cultural resources would continue, and less land area would trend toward a more natural FRCC. These existing trends would result in a higher risk of severe wildfire and subsequent damage or destruction of cultural resources within the planning area.

4.3.4 INVASIVE, NOXIOUS AND NON-NATIVE SPECIES

Short-term Impacts

Under the No Action Alternative, effects of invasive noxious and non-native species establishment would be similar to that described under the Proposed Action. Because seeding and noxious weed prevention guidance would be employed, short-term impacts would be minimized.

Long-term Impacts

Under the No Action Alternative, fire size and severity affecting the establishment of noxious weeds would continue to increase, and a subsequent increase in the range of invasive weeds would be expected. The likelihood of larger and more severe wildfires would allow invasives like cheatgrass to progressively colonize new areas. More aggressive seeding and rehabilitation programs would be required to control infestations. Management actions must comply with EO 13112 (Invasive Species), however, that compliance would be much more difficult in response to wildfire suppression than under the management action in the Proposed Action.

4.3.5 NATIVE AMERICAN RELIGIOUS CONCERNS

Short-term Impacts

Under No Action Alternative, hazardous fuels would continue to increase. The potential for large severe wildland fires is similar to that in the short term under the Proposed Action. However, a more concerted effort to suppress wildland fires under the No Action Alternative would occur, increasing the likelihood of impacts on Native American Religious Concerns from suppression activities. This would include potential impacts on vegetation use areas and sites used for religious and ceremonial purposes. Assuming initial suppression efforts would be successful, follow-up restoration and rehabilitation would be smaller in acreage than under the Proposed Action, thereby subjecting Native American Religious Concerns to fewer widespread impacts.

Prescribed fire and non-fire fuel treatment would have the similar effects on Native American Religious Concerns as the Proposed Action, only on a smaller scale.

Long-term Impacts

With the continued build-up of hazardous fuels, wildland fire would be expected to trend toward larger and more severe events. This would result in alteration of vegetation composition in use areas, and increased direct and indirect impacts on religious and ceremonial sites. The lack of wildland fire use, and a lesser amount of planned fuel treatments would exacerbate this trend. In addition, aggressive suppression efforts would be required to control the impacts from severe events, increasing the potential for impacts on Native American Religious Concerns from ground disturbing activities. Extensive rehabilitation actions would be required following these events potentially altering the religious value of the impacted area.

Prescribed fire and non-fire fuel treatment methods would be conducted on fewer acres as under the Proposed Action. While decreasing impacts on Native American Religious Concerns from ground disturbing activities, the No Action Alternative would exacerbate the trend toward heavier fuel loads. This would result in larger, more severe fires and more aggressive suppression efforts to contain them.

4.3.6 SPECIAL STATUS SPECIES

Short-term Impacts

Short-term impacts (e.g., habitat modification, plant mortality, and/or displacement of animal individuals or populations) from suppression activities would be similar, with slightly more impacts from ground-disturbing suppression actions in the No Action Alternative due to suppression actions.

Though prescribed fire and non-fire fuel treatments would be limited under the No Action Alternative, short-term impacts would be similar to those under the Proposed Action. Both alternatives would require consultation with the USFWS, which would likely ensure protection of species and their habitat, prior to implementation of fire management activities. Accordingly, few adverse impacts to species (plant and animal) and their habitat would likely occur. For non-fire fuel treatments, RPMs are either nonexistent or outdated (not supporting current management goals and objectives). Therefore, short term impacts associated with ground disturbance and potential for noxious weed infestation could occur.

Long-term Impacts

Under the No Action Alternative, a trend toward larger, more severe wildland fires would be expected. Accordingly, long-term, ecosystem-wide beneficial effects of the Proposed Action on special status species and their habitat would be less under the No Action Alternative. Indirect adverse effects (from long-term fuel loading and changes in vegetation composition and structure caused by wildfire suppression and potentially severe wildland fires) to individuals, populations, and habitats would continue.

4.3.7 WATER QUALITY

Short-term Impacts

Surface Water

Figure 4.10 presents the location of 303(d)-listed waterbodies located within the planning area's No Action Alternative Categories A-C. The majority of the 303(d)-listed impaired waters in the planning area are not located on BLM-administered land. Those that are located on BLM-administered land are primarily located in fire management categories where wildland fire is generally not considered desirable.

Short-term effects to surface water would be similar to those seen under the Proposed Action.. Under the No Action Alternative, surface water would be at risk from soil disturbance and increased erosion potential

related to fire suppression activities such as fireline construction, and other uses of heavy equipment. This could result when wildfires are suppressed.

The use of federally-mandated procedures in the vicinity of sensitive areas such as 303(d)-listed impaired water would likely result in similarly limited impacts on water quality as are anticipated in the Proposed Action. However, the No Action Alternative could provide less guidance and fewer restrictions and RPMs with respect to activities in these areas.

Groundwater

Short-term effects to groundwater would be similar to those discussed under the Proposed Action.

Long-term Impacts

Surface Water

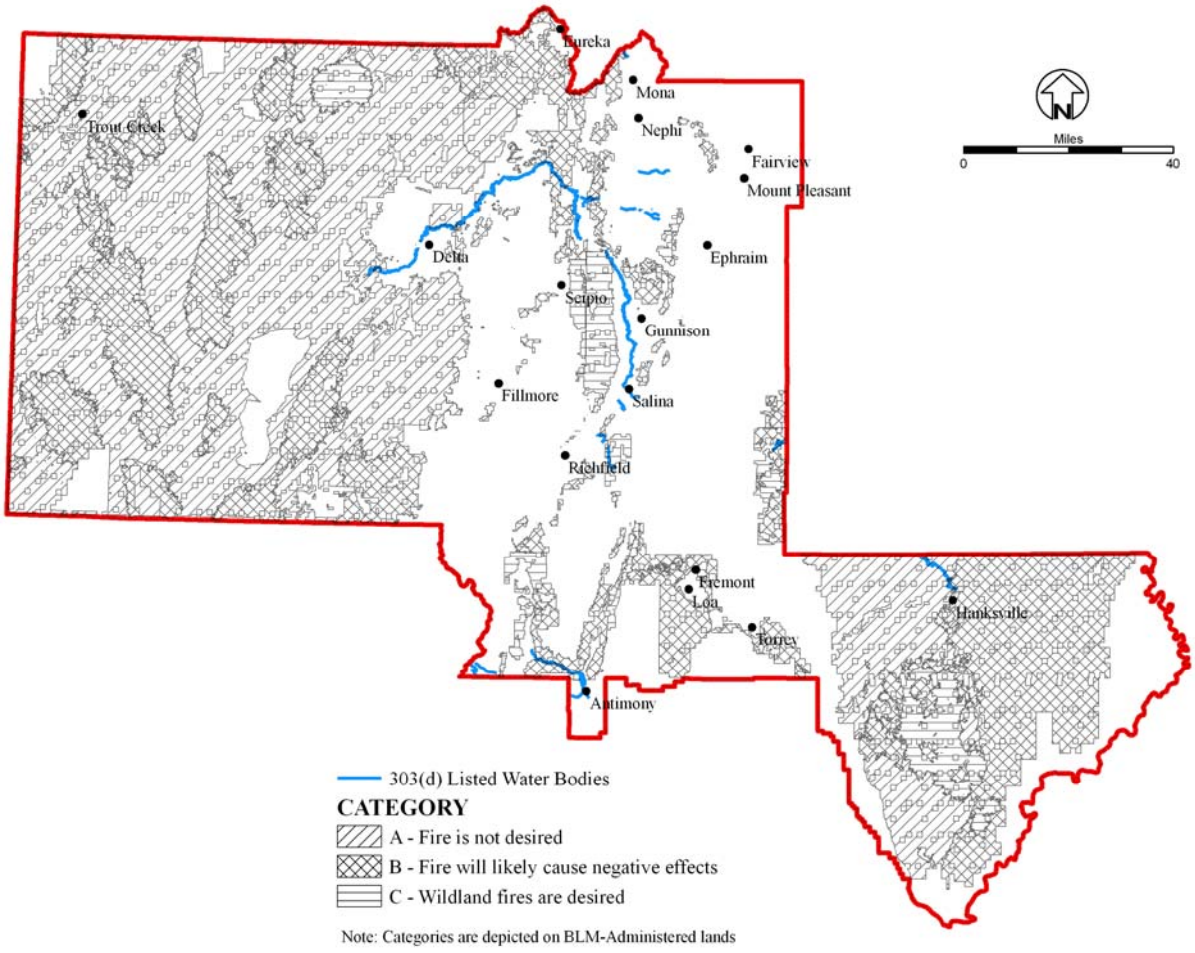
Under the No Action Alternative, surface water resources would trend toward greater impacts. This could result in the increase of severe wildfires, which could increase the loss of vegetation cover and organic matter, and the degradation of sustainable stream banks from erosion. Effects could also include increases in temperature variations, dissolved and suspended solids, and nutrients.

The use of already established best management practices in the vicinity of sensitive areas such as 303(d)-listed waterbodies would likely result in similar limited impacts on water quality as in the Proposed Action. However, the expected increase in large or severe wildland fires would make following these guidelines less feasible, potentially resulting in decreased water quality during and following these events.

Groundwater

The increasing occurrence of large or severe wildland fires could decrease the amount of infiltration into the subsurface. Water that would not infiltrate to the subsurface could have an increased nutrient load obtained as it passes through burned vegetation and physiochemically altered shallow soils.

FIGURE 4.10: 303(D)-LISTED STREAMS AND FIRE MANAGEMENT CATEGORIES UNDER THE NO ACTION ALTERNATIVE



4.3.8 WETLANDS AND RIPARIAN ZONES

Short-term Impacts

Short-term effects on riparian resources would be similar to those seen under the Proposed Action. However, under the No Action Alternative, there would be fewer acres of prescribed fire and non-fire fuel treatments, and no wildland fire use.

The No Action Alternative lacks specific RPMs protecting wetland and riparian zones, thereby increasing the likelihood of negative impacts. Short-term impacts of suppression activities could include vegetation damage or destruction, increased stream bank and shore erosion, and increased sedimentation in streams that degrades fish habitat and water quality. The loss of streamside vegetation could result in an increase in stream temperature resulting in degradation of fish and other aquatic species habitat. Potential impacts on riparian areas would be minimized through an AMR at the time of ignition and throughout the fire event.

Vegetation disturbance associated with prescribed fire and non-fire fuel treatments would be evaluated and reviewed. Impacts to wetland and riparian zones would be considered. Impacts would generally be short-term, and conditions would return to pre-fire levels once vegetation was re-established.

Long-term Impacts

The No Action Alternative, could, increase the loss of vegetation cover and organic matter, increase the degradation of banks, and increase erosion rates in riparian and wetland areas.

4.3.9 WILD AND SCENIC RIVERS

Short-term Impacts

The increased emphasis on suppression only, could lead to more severe short-term impacts than those anticipated under the Proposed Action. Suppression efforts could potentially decrease the amount of river segment acres that burn. Fewer burned acres may give the impression of a more natural environment, though the lack of fire would actually increase fuel loads. Less treatment results in greater accumulation of fuels and trends away from DWFC.

Long-term Impacts

This alternative would likely continue to trend in fuel buildups in or around eligible river segments. If heavy fuel loads were ignited, then a fire of high severity and temperature could damage historic, cultural, scenic, or other relevant and important values. Suppression efforts to protect river segments may increase impacts on the values present. The exclusion of fire from ecosystems, as would be directed under the No Action Alternative, runs counter to managing areas for naturalness. Effects from planned actions would be less than in the Proposed Action, due to the lower acres targeted for those treatments.

4.3.10 WILDERNESS STUDY AREAS

As shown in **Figure 4.11**, WSAs in the planning area lie within Category A, B, and C fire management categories. There is relatively little land within Category C designations, where wildland fire would be desired. In all categories, management activities would be carried out in a manner that would minimize or not impair impacts on wilderness suitability of the areas.

Short-term Impacts

Under the No Action Alternative, fire management would continue to focus only on suppression efforts impacting wilderness character, including opportunities for solitude and primitive recreation, and naturalness. Expected impacts from prescribed fire and non-fire fuel treatments would be slightly less compared to planned actions described under the Proposed Action because fewer acres for treatment are identified.

Long-term Impacts

Because wildfire suppression would be used more, and prescribed fire and non-fire fuel treatments would be used less under the No Action Alternative, a trend toward larger fuel build-up in or around WSAs would continue. This trend would result in higher risk for severe wildland fire, and subsequent long-term risk to naturalness and supplemental values associated with WSAs. Additionally, opportunities for solitude and primitive and unconfined recreation could also be impaired.

4.3.11 LIVESTOCK GRAZING

Short-term Impacts

As shown in **Figure 4.12**, the majority of grazing allotments are located in areas where fire management categories consist of wildland fire management goals focused on minimizing wildland fire. Because most BLM-administered lands within the planning area are part of an allotment, the percentage of allotments falling into Categories A-D is similar to percentages of Categories A-D occurring within the planning area.

Under No Action Alternative, approximately 55 percent of grazing allotments fall into Category A, 39 percent in Category B, and six percent in Category C. There are no acres in Category D.

Under No Action Alternative the short-term impacts of fire management activities would be less than Proposed Action with the potential exception of large severe wildfire and suppression related impacts. Suppression related impacts would potentially be larger due to more wildfire suppression.

Long-term Impacts

Under the No Action Alternative, vegetation would trend toward a condition supporting higher severity wildland fire. The increased risk of severe wildland fire could lead to the loss of allotment use for periods longer than under Proposed Action, due to the loss of seedbanks and physical and chemical degradation of soil that would negatively impact the allotments' ability to recover after wildfire.

FIGURE 4.11: WILDERNESS STUDY AREAS AND FIRE MANAGEMENT CATEGORIES UNDER THE NO ACTION ALTERNATIVE

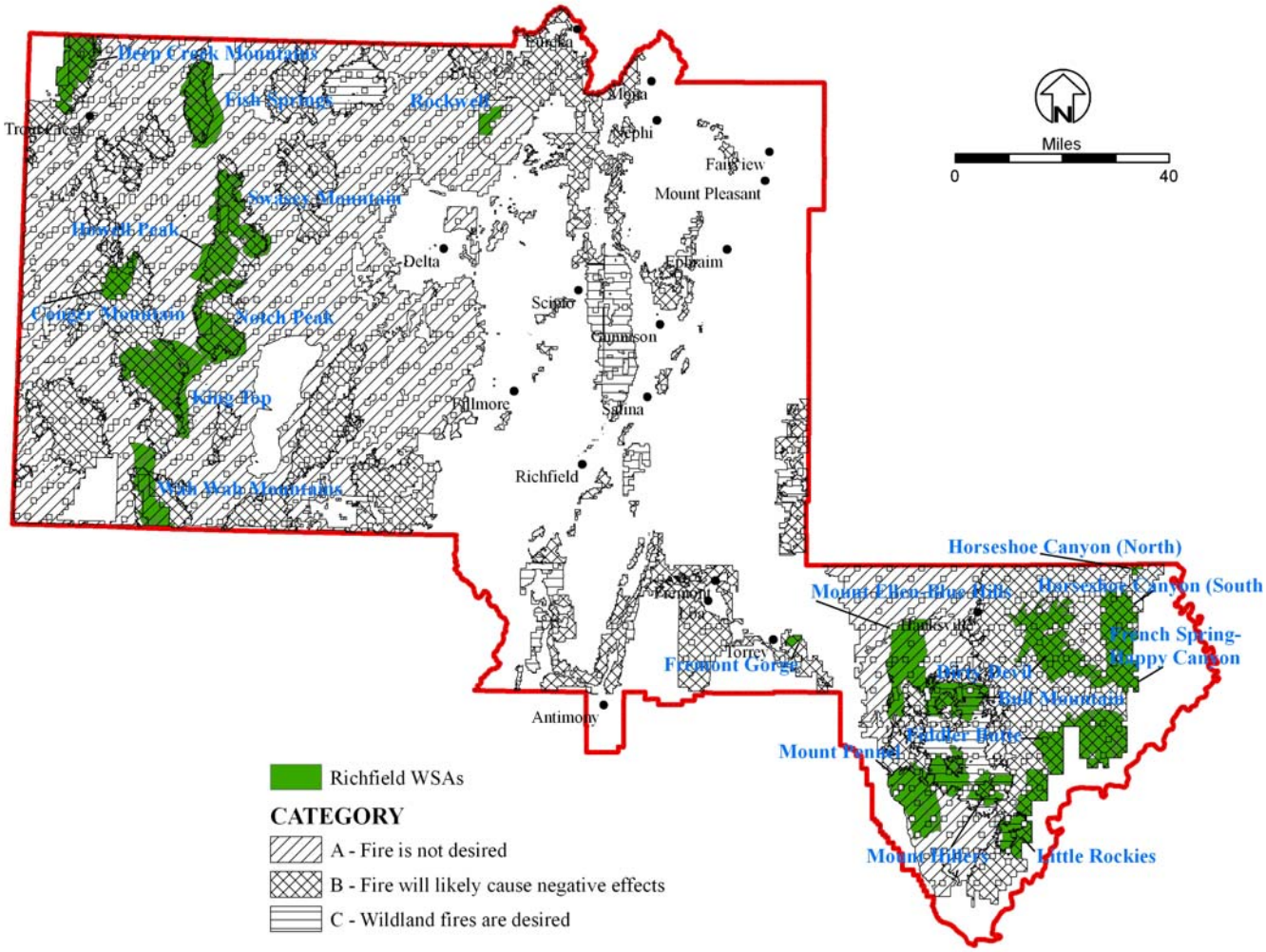
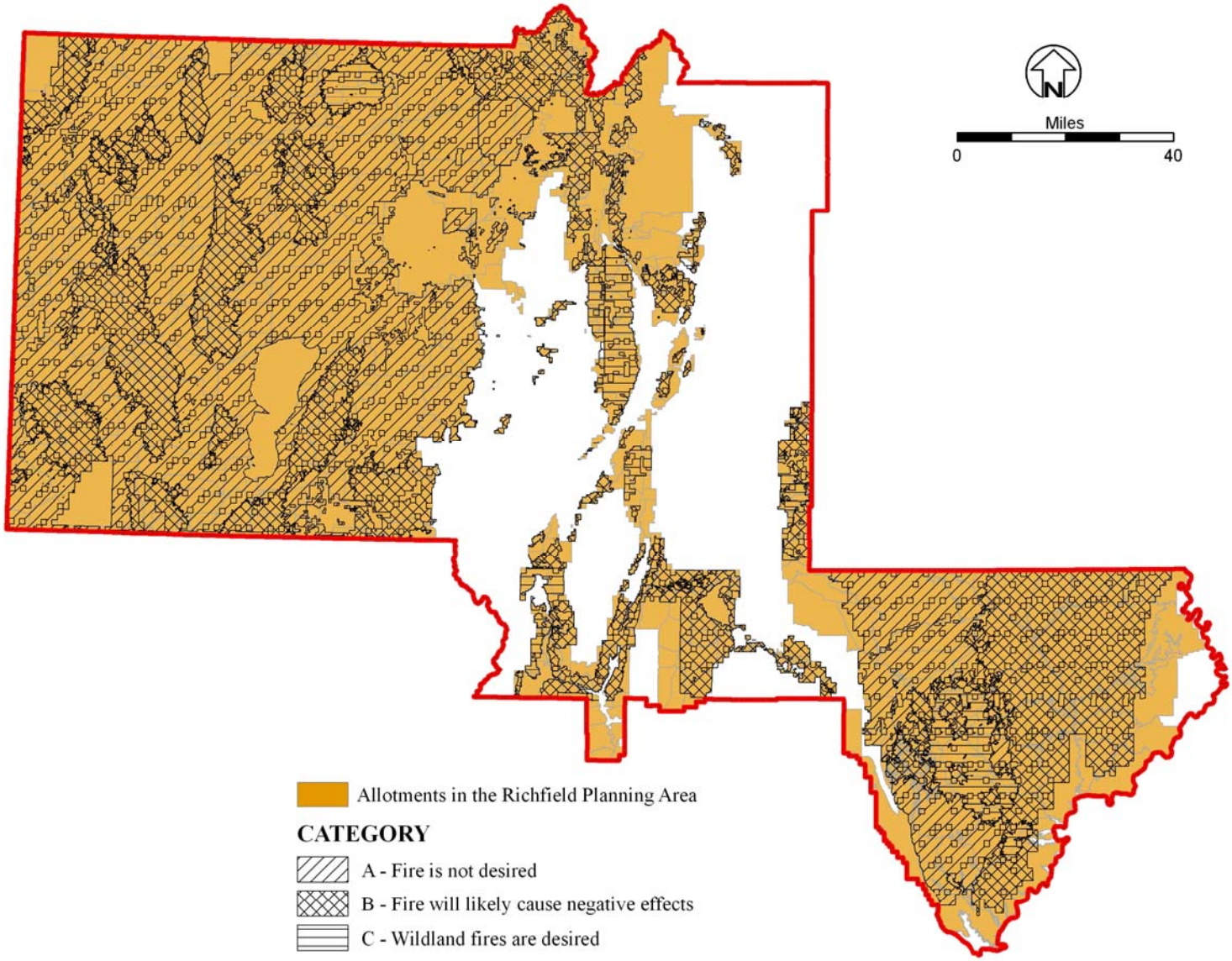


FIGURE 4.12: GRAZING ALLOTMENTS AND FIRE MANAGEMENT CATEGORIES UNDER THE NO ACTION ALTERNATIVE



4.3.12 WOODLANDS AND FORESTRY

Short-term Impacts

Under the No Action Alternative, short-term suppression-related impacts could be greater than under the Proposed Action. The No Action Alternative would continue trends toward hazardous fuel accumulations and juniper encroachment. Non-fire fuel treatments and prescribed fire used to reduce the occurrence of younger age classes in areas of old growth (in particular for ponderosa) could increase the survivability of old growth forests during fire events (Howard 2003), although to a lesser degree than under the Proposed Action since these treatments would be less.

Long-term Impacts

Aggressive fire suppression under the No Action Alternative would result in a build-up of fuels, and a higher risk of severe wildland fire would continue. A subsequent decrease in the amount of firewood, Christmas trees, posts and pinyon nut harvesting opportunities could result in areas affected by these events.

Biomass availability from treatments would be reduced under the No Action Alternative since these treatments would be smaller.

4.3.13 VEGETATION

Table 4.2 shows the percent of each GAP vegetation type in each of the fire management categories under the No Action Alternative. Effects are described under each vegetation type. **Figure 4.13** shows vegetation types relative to the fire management categories.

TABLE 4.2: PERCENT OF EACH VEGETATION TYPE AND FIRE MANAGEMENT CATEGORY

Vegetation Type Groups	Fire Management Category			
	A	B	C	D
Salt Desert Shrub	87%	12%	0%	0%
Sagebrush	18%	74%	7%	0%
Pinyon and Juniper Woodland	9%	67%	24%	0%
Grassland	37%	60%	3%	0%
Ponderosa Pine	0%	81%	19%	0%
Mountain Shrub	3%	64%	33%	0%
Oak	0%	22%	78%	0%
Mixed conifer	11%	70%	19%	0%
Aspen	0%	0%	43%	0%

Short-term Impacts

All Vegetation Types

Under the No Action Alternative, short-term impacts from each of these actions would be similar to those described under the Proposed Action. The No Action Alternative does not contain the RPMs established for invasive species and noxious weeds in the Proposed Action, but weed control measures would still be considered part of No Action Alternative due the EO 13112 (Invasive Species) and the effects would be

similar to the Proposed Action. The current trend away from DWFC would continue. FRCC would continue to move toward FRCC3.

Salt Desert Shrub

Large, severe wildfires would continue to impact this vegetation, increasing the cheatgrass conversion. This is further away from DWFC. Very little (only incidental, isolated patches) of this vegetation type occurs in areas where prescribed fire would be considered. Consequently, the damaging effects or prescribed fire (invasion of noxious weeds and lack of regeneration following fire) would be avoided in this alternative. Non-fire fuel treatments would be less under the No Action, so beneficial effects of treatments would be less under this alternative compared to the Proposed Action.

Sagebrush

Sagebrush communities would continue to be encroached upon by pinyon/juniper vegetation, moving further away from DWFC and creating more FRCC3 vegetation. The No Action Alternative will have fewer acres of prescribed fire and non-fire fuel treatments. Therefore, fewer acres would benefit from treatments to reduce crowded and decadent sagebrush and encourage seedlings to sprout (Paysen et al. 2000).

Pinyon and Juniper Woodland

Pinyon and juniper would continue to encroach on sagebrush/grass ecosystems at the present rate. Large, severe wildfires would continue to impact this vegetation, increasing the cheatgrass conversion. This is further away from DWFC. Since prescribed fire and non-fire fuel treatments would be implemented on fewer acres, the No Action Alternative would have fewer acres benefiting from treatments to reduce juniper encroachment and pinyon and juniper woodland density.

Mountain Shrub and Oak

Large, severe wildfires would continue to impact this vegetation, increasing the cheatgrass conversion. This is further away from DWFC. Since prescribed fire and non-fire fuel treatments would be implemented on fewer acres, the No Action Alternative would have fewer acres benefiting from these treatments. There would also be fewer short-term impacts to these vegetation types from the treatments.

Mixed Conifer

Mixed conifer will continue to encroach into the aspen ecosystems, reducing FRCC and moving away from DWFC.

Aspen

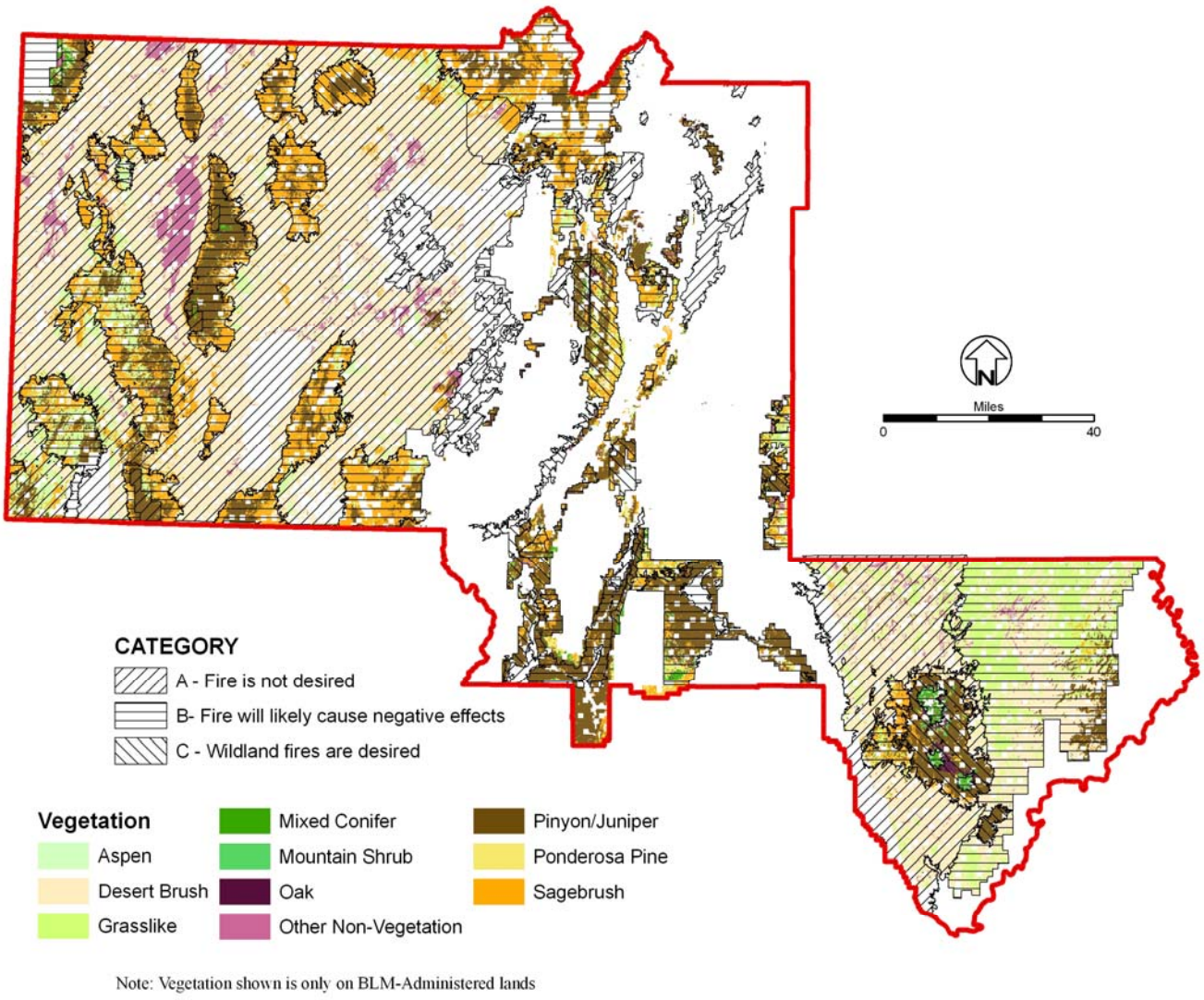
The important aspen component of the vegetation will continue to be lost. More than 65% of this ecosystem has been lost statewide (Campbell and Bartos, 1998).

Long-term Impacts

All Vegetation Types

Under the No Action Alternative, long-term impacts could occur in any and all vegetation types within the planning area. Long-term impacts could include a continuation of, or an increase in, existing FRCCs accompanied by an increased risk of severe wildland fire.

FIGURE 4.13: VEGETATION TYPES AND FIRE MANAGEMENT CATEGORIES UNDER THE NO ACTION ALTERNATIVE



Note: Vegetation shown is only on BLM-Administered lands

4.3.14 FISH AND WILDLIFE

Short-term Impacts

Short-term impacts from burning could be less than under the Proposed Action. Short-term impacts (e.g., introduction of fire retardant and/or foam into the ecosystem, habitat modification, plant mortality, and/or displacement of animal individuals or populations) from actual suppression activities would be slightly increased due to emphasis on suppression.

Because prescribed fire and non-fire fuel treatments would be fewer under the No Action Alternative, short-term impacts would be similar to those listed for the Proposed Action, only to a lesser degree. Less direct, adverse impacts on fish and wildlife species and their habitat, would occur. Additionally, short-term impacts associated with ground disturbance and potential for noxious weed infestation (i.e., alteration of habitat, particularly habitat used for foraging) would be less than under the Proposed Action.

Fish, and Non-game and Big Game Species

A slight increase in direct effects could occur from wildfire suppression under the No Action Alternative. Because of limited acres of prescribed fire and non-fire fuel treatments, short-term adverse impacts would be less under the No Action Alternative.

Long-term Impacts

Adverse impacts (from long-term changes in vegetation composition and structure caused by fire suppression and lack of fuel treatments leading to potentially severe wildland fires) to individuals, populations, and habitats would continue.

4.3.15 SOILS

Short-term Impacts

The No Action Alternative does not include RPMs to protect soils from adverse impacts from fire management actions. Therefore, potential impacts could be greater under this alternative. Short-term effects to soils would be similar to those described under the Proposed Action

Due to the lack of RPMs and guidance under the No Action Alternative, soils would be at greater risk for impacts due to soil disturbance and compaction related to intensive wildfire suppression activities such as fireline construction, road construction, and other uses of heavy equipment. Similar to the Proposed Action, potential indirect impacts of the No Action Alternative would include sedimentation of streams and reservoirs from wind and water erosion.

Long-term Impacts

A greater occurrence of adverse impacts would occur on soil resources. High severity fires would remove more vegetation cover and organic matter, reducing nutrient cycling. Increases in physiochemical alteration and decreases in plant-available moisture in shallow soils could occur. High-severity wildfires would also be more likely to adversely affect soil microorganisms, decreasing biological crusts that prevent erosion and fix nitrogen from the atmosphere. High-severity fires could also result in the formation of water-repellent soil layers (Robichaud et al. 2000), which can decrease infiltration and increase the rate and quantity of runoff causing accelerated erosion and potentially dangerous debris flows. The degree of water repellency in soils following a fire is positively correlated with fire severity. These impacts would decrease the ability for soil to foster the beneficial uses of natural vegetative growth and wildlife habitat.

4.3.16 SOCIOECONOMICS

Short-term Impacts

Short-term adverse impacts associated with an increased risk of severe wildfire could include a greater risk to WUI areas (and their associated infrastructure and resource values), reduction in air quality, and temporary loss of allotment use.

Long-term Impacts

A trend toward increases in hazardous fuels would continue and a subsequent risk of severe wildfire would increase over the long term.

4.3.17 WILDERNESS CHARACTERISTICS

As shown in **Figure 4.14**, WSAs in the planning area are found within Category A, B, and C designations. There is relatively little land within Category C designations, where wildland fire is desired.

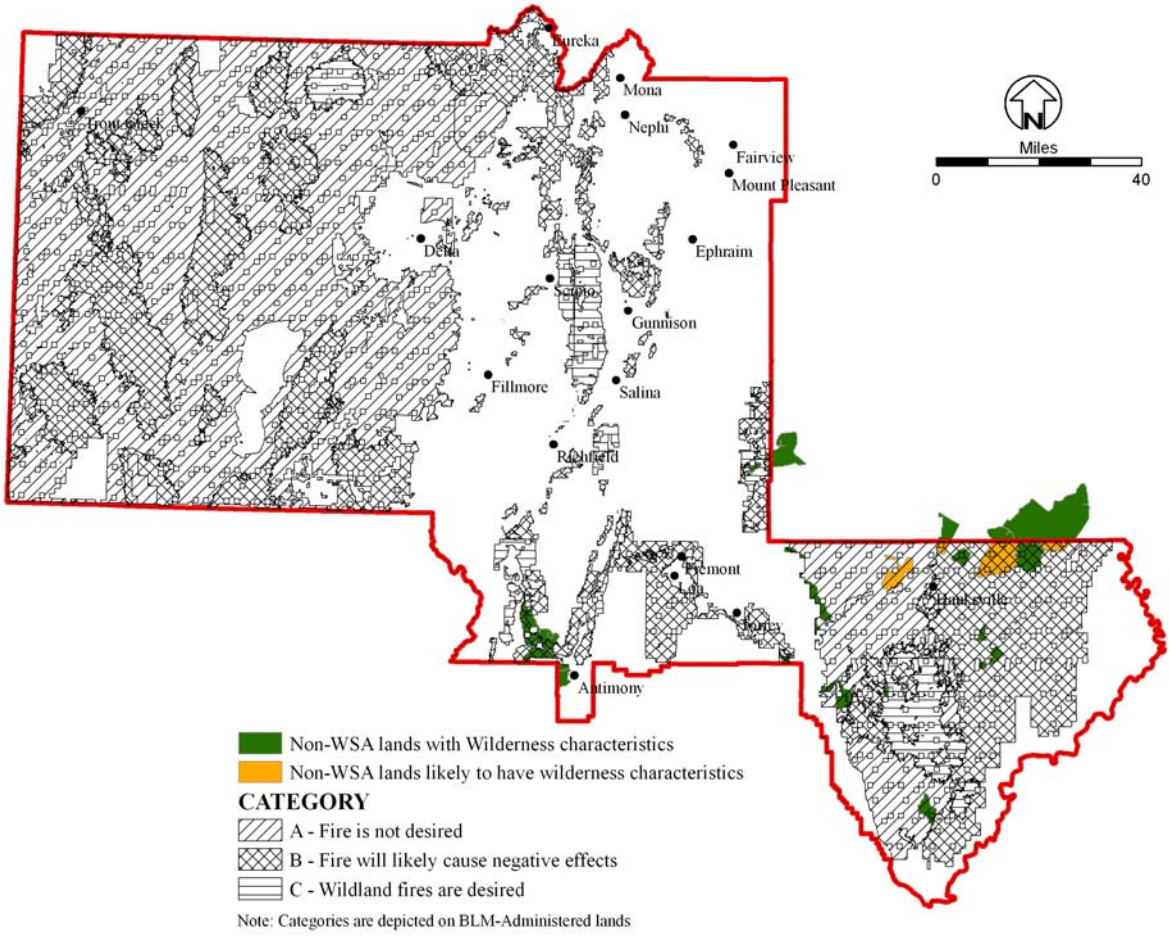
Short-term Impacts

Short-term impacts associated with suppression actions could be higher than under the Proposed Action. Because prescribed fire and non-fire fuel treatments would be limited under the No Action Alternative, areas deemed appropriate for these planned treatments would likely have fewer short-term impacts.

Long-term Impacts

The No Action Alternative would likely continue to trends away from DWFC and toward large, severe fire. High severity fires could damage resource values (e.g., naturalness, opportunities for solitude and primitive recreation). Suppression efforts to protect these areas may increase impacts on the values present. Fire suppression action, as under the No Action Alternative, runs counter to managing areas for naturalness.

FIGURE 4.14: NON-WSA LANDS (WITH OR LIKELY TO HAVE) WILDERNESS CHARACTERISTICS AND FIRE MANAGEMENT CATEGORIES UNDER THE NO ACTION ALTERNATIVE



4.4 CUMULATIVE IMPACT ANALYSIS

Cumulative impacts are the effects on the environment that may result from the incremental impact of the Proposed Action or No Action Alternative in combination with other past, present, and reasonably foreseeable future actions on BLM managed lands, as well on those lands under other jurisdictions that are adjacent to or sometimes within BLM boundaries. Cumulative impacts must consider the likely effect of the Proposed Action or No Action Alternative when combined with these additional actions.

4.4.1 PAST AND PRESENT ACTIONS (NO ACTION ALTERNATIVE)

As summarized throughout this EA, scientists and natural resource specialists now agree that fire is a critical natural process that helps maintain healthy ecosystems. Past and present Richfield planning area resource and fire management activities outlined in the No Action Alternative, encouraged years of fire suppression, minimal fuels treatments, and no wildland fire use. Outdated fire management policies and actions now appear to have contributed to overall pinyon/juniper expansion and the introduction of exotic annual and noxious weeds. Cumulative effects of past and present actions on resources include a buildup of hazardous fuels, a reduction in understory, declines in diversity and health of vegetative communities, and increased susceptibility of soils to erosion.

Combined, these cumulative effects have compromised air, water, soil, and visual resources; have increased the threat of, and resulted in severe wildland fires; and have created a greater fire risk for communities. If fire management goals and objectives remain as they have in the past, these impacts could consistently multiply and would cumulatively affect resources already impacted by other actions such as increased recreation and visitation, oil, gas and coal exploration and development, and the spread of non-native/invasive and noxious weeds.

Long-term suppression of wildland fire in many areas could contribute to the continuing trend of fuels buildup, exacerbating the threat of severe wildland fire and potentially damaging biologic, cultural, or scenic resources.

Large-scale implementation of the National Fire Policy by other agencies may reduce fuels buildup on adjacent lands, improve habitat, and reduce invasive/non-native and noxious weeds. This includes the introduction of wildland fire use in areas adjacent to BLM-administered lands. Because fire is a process that can operate on a large spatial scale, these types of fire management activities by other agency may affect entire landscapes that include BLM lands. If compromised habitat and hazardous fuels continue to threaten the majority of BLM lands, treatments on adjacent lands could be less effective. Because public lands in central Utah encompass lands managed by several entities, the effects of wildland fire and hazardous fuels treatments are very seldom boundary-specific. Critical watersheds affecting communities, wildlife populations, grazing lands, multi-agency-managed forests, and valuable riparian areas can be compromised by severe wildfire on private lands or on any of the agency-managed lands.

Cumulative impacts from severe wildfires can include changes in vegetation composition and structure. Severe wildfires across agency boundaries may have negative effects on water quality, increasing or reducing infiltration and affecting both runoff and groundwater.

Wildfire can also cause changes in the vegetative fuel load by increasing unpalatable species growth and introducing or encouraging the spread of invasive and noxious species across boundaries. These impacts could result in the loss of wildlife habitat components including linkages, in a cumulative and in some cases permanent manner. Individuals and populations unable to adjust to or survive displacement and unable to adapt to the presence of man would be most severely impacted. The health and productivity of livestock grazing resources can be similarly affected from both the reduction in vegetative composition and possible spread of invasive/non-native and noxious weeds following a wildfire.

4.4.2 REASONABLY FORESEEABLE ACTION SCENARIO

The following reasonably foreseeable action scenario (RFAS) identifies actions that could cumulatively affect the same resources as those included in the planning area for the Proposed Action and No Action Alternatives.

Reasonably Foreseeable Actions on BLM Lands

- **Vegetation treatments resulting from wildlife habitat and other restoration projects.**

The Great Basin Restoration Initiative (GBRI) is a BLM-spearheaded plan to develop strategies for the restoration of degraded lands. The scope of the initiative includes portions of five states with a priority for restoring fire-damaged or weed-infested rangelands.

In November of 2004 the BLM released a national strategy for managing sagebrush habitat on lands managed by the BLM that are also used for grazing, recreation, mining and energy developments. Strategies implemented to enhance sagebrush habitat through restoration and improvement of shrub-steppe ecosystems could overlap with the Proposed Action in specific vegetative communities. The Sagebrush Restoration and Management initiative is a multi-agency statewide coordinated treatment for sagebrush ecosystems that includes thousands of acres in the Richfield planning area. The initiative aims to restore sagebrush sites and provide habitat for key species through treatments implemented over the next decade.

The Utah Association of Conservation Districts formally organized a state-level organization entitled Utah Partners for Conservation and Development (UPCD) to strengthen coordination efforts and to link state and federal financial and technical resources in the implementation of conservation practices significant to watersheds, shrub-steppe ecosystems, endangered species, and others. The UPCD has prioritized potential projects, prepared conservation plans, and obtained federal, state, and private dollars to implement restoration treatments and maximize efforts to restore watershed health.

- **Continued increases in WUI populations and expanded WUI areas.**

The populations of the counties within the Richfield planning area have had a moderate increased over the past ten years with a more rapid growth around Torrey, grover Northern Sanpete County and northern Juab County. Population projections anticipate that this trend will continue and that within the next twenty years, the number of people living in Utah will increase by over six percent (Population Projections, LeRoy W. Hooton, Jr., 2002). Increases in population would result in corresponding areas where buildings, homes and other structures of human development are adjacent to or directly intermingling with wildlands.

- **Standards for Rangeland Health**

In 1995, BLM grazing regulations were changed to focus public land management on ecosystem health. As a result, standards for rangeland health and guidelines for grazing management were developed for each state (USDOI, BLM Instruction Memorandum No. 2001-079, January, 2001). The standards set minimum requirements for proper nutrient/hydrologic cycling and energy flow relative to a system's ecological potential, and the guidelines directed significant progress towards meeting the standards. Ongoing efforts to move resources toward ecosystem health are expected to continue into the future.

- **Increased recreational use of BLM lands within the planning area.**

Central Utah experiences heavy seasonal recreational visitation which has more than doubled in the past twenty years. Most recreationists visit the area to engage in personal recreational activities but there are those who attend special events in the area and/or participate in an organized activity with a commercial outfitter. Recreational use includes camping, OHV use (ATV, dirt bike, and four-wheel driving), mountain biking, horseback riding, and hiking. There are developed recreation sites throughout the Richfield planning area with facilities including campgrounds and picnic areas (tables, dumpsters, shade shelters, fire grills, etc.), vault toilets, boat ramps, information boards, and parking lots.

Because visitation has increased every year, it is estimated that the number of visitors will continue to increase and that the demand for facility development will increase concurrently. Priorities for suppression of wildfires include not only protecting firefighter and public safety, but also preventing damage to BLM improvements.

- **Continued expansion of mineral extraction activities associated with oil and gas, coal, and other minerals.**

Oil and gas exploration and development will continue to expand throughout the planning area. Oil and gas exploration and production has also been on the rise, and it is likely that resources will continue to be developed over the next fifteen years mainly in the Sanpete and Sevier counties. Coal mining will continue in the Sanpete county area with the possibility of tar sand exploration and development in Sanpete County. There are also coal reserves in the Henry Mountains. The entire planning area is open to mining claims, and there has recently been an increased interest in uranium and other mineral extraction. Active mines area also present in Millard County.

- **Transportation and utility corridor development, expansion, maintenance, and improvement.**

Cumulative impacts to the viewshed are resulting from increases in recreation and visitation as well as from the development of utility corridors and other land use disturbances. The increasing number of two-track roads and routes allow OHV users, campers, and woodlands harvesters to access more backcountry areas. It is also possible that closures and/or road and route designations may decrease associated land disturbances and/or the possibility for human-caused ignitions.

- **Continued and increased invasive/non-native and noxious weed infestation.**

In addition to tamarisk and Russian olive encroachment along river and stream corridors, major areas of uplands and rangelands are being converted to invasive annual grasses such as cheatgrass, halogeton, Musk Thistle, Scotch thistle, Knapweed and Russian thistle. These species become a fire hazard in wet years, produce little forage in dry years, and prevent reestablishment of native species.

The Invasive Species Executive Order 13112 encourages all agencies, including the BLM, to research mechanisms to control the introduction and spread of invasive species. Invasive/non-native weed infestation can spread to BLM lands from adjacent public and private lands and vice versa. The BLM Noxious Weed Program has identified and documented populations of invasive/non-native/noxious weeds in the planning area. These sites are monitored annually and controls and/or treatments are applied as dictated by time and budgetary constraints. This ongoing monitoring, documentation, and treatment program supports the achievement of DWFC goals by identifying potential treatment sites and reducing the likelihood of sites that may go un-noticed, uncontrolled, and that would spread further if untreated.

- **Continued human-caused and natural fire ignitions.**

Human-caused fires may increase along transportation routes, in heavily used recreation areas and in the wildland/urban interface (WUI). Fires as a result of natural ignitions will continue to be the major source of fires within the planning area. Extended periods of drought, low fuel moistures, and other environmental influences will affect the location, size and severity of any fires.

Reasonably Foreseeable Actions on Adjacent Lands

The Richfield planning area is comprised of a variety of vegetative communities that spread beyond BLM jurisdictional boundaries. Vegetative communities overlap with thousands of acres under private ownership, under management direction of several different federal agencies (BIA, NPS, USFS), and under ownership of various divisions within the State of Utah (FFSL, SITLA). Management of lands under multiple jurisdictions adjacent to or within the planning unit FMUs may cumulatively affect BLM-managed lands in areas such as fire and fuels management; recreation management; invasive weed control; grazing and wildlife management;

extractive industries; and/or private and commercial uses such as airports, highways, railroads, powerlines, campgrounds, etc. Communities-at-risk within the Planning area boundaries may or may not have developed plans to manage growth and development extending into surrounding landscapes and to mitigate hazards within the communities, which could also have a cumulative effect on BLM fire management and BLM resources. For example, suppression within and adjacent to BLM lands is dependent upon factors such as location relative to populated areas, probability of spread, threats to public safety or private property, land status, and others. Increases in the number of WUI areas and expanding communities can result in a demand for more intensive suppression activities.

The National Park Service (NPS) recently prepared and is implementing a Fire Management Plan outlining the focus and strategy for management of fire and fuels within Canyonlands National Park. The Fishlake National Forest has prepared and is implementing a Fire Management Plan outlining the focus and strategy for management of fire and fuels within the Fishlake National Forest. These plans include the use of suppression, wildland fire use and various techniques to reduce hazardous fuels.

The US Fish and Wildlife Service (USFWS) has prepared and is implementing a Fire Management Plan outlining the focus and strategy for management of fire and fuels within the Fish Springs National Wildlife refuge.

The State of Utah, Department of Natural Resources, Division of Forestry, Fire, and State Lands (FFSL) oversees fire-related activities on lands currently under State of Utah ownership as well as wildland fire management on private lands within Garfield, Sanpete, Millard, Juab, Wayne and Sevier Counties. Lands that are managed by FFSL are both adjacent to and scattered within most of the FMUs of the planning area. FFSL oversees, plans, and implements fire suppression and fuels reduction on state lands as well as working directly with communities to establish community fire plans. Each of the counties within the planning area falls under the regulations of the Utah Division of Water Resources with respect to exotic and invasive vegetative management.

Reservation lands within the planning area are relatively small. Fire and fuels management on lands within the reservation are overseen by the Bureau of Indian Affairs (BIA). When fires occur on reservation lands adjacent to BLM lands, initial attack and suppression activities are coordinated between the cooperating agencies.

Private lands and management of those lands can affect resources such as vegetation, air quality, soils, watersheds, and water quality on adjacent BLM lands. Population growth, increases in WUI areas, community pro-activeness in fire and fuel management, recreation, industrial growth and/or extractive industries, and invasion or spread of non-native/invasive and noxious weeds are just a few examples of actions that may take place on adjacent private land that could contribute to resource effects from management actions on public lands.

Table 4.3 below identifies existing uses, services, management actions, practices, and/or future plans within each FMU that may have a cumulative effect on lands within the planning area when combined with activities outlined in the Proposed Action. A general discussion of cumulative resource effects follows in Chapter 4.2.1.

Table 4.3 Adjacent Lands Actions and Potential Cumulative Impact Considerations

FMU #	FMU Name	Land Status	Acres	Known Proposed Fire/Fuels Management Actions and/or Existing or Planned Uses	Special Considerations
A1	**West Desert Lowlands**	BLM Private State USFWS	1,942,099 421,384 292,040 14,783	Suppression 500 acres or less Hazardous fuels treatments Mining; ranching; hunting; recreation. Communities at risk protection. Restoration projects	Wild horses Prairie dog, pygmy rabbit, antelope Big game winter range Invasive species Power lines and natural gas lines, railroad Cultural resource sites Riparian vegetation – Fish Springs Military Training Areas
B1	**Little Sahara Recreation Area**	BLM Private State	57,580 45 5,171	Suppression at 1500 acres or 2500 acres depending on the fire intensity level Hazardous fuels treatments OHV use Camping	Rockwell WSA Sensitive plant species Sage grouse Big game winter range Invasive species Cultural resource sites Recreation facilities Power lines and natural gas lines, railroad
B3	**Drums**	BLM Private State Military Reserve	190,947 2,218 23,457 111	Suppression at 1500 acres or 2500 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation.	Invasive species Cultural resource sites Military Training Areas
B4	**Confusions**	BLM Private State	650,742 421,384 884	Suppression at 1500 acres or 2500 acres depending on the fire intensity level Suppression of fires in Bristlecone pine stands to less than 50 acres Hazardous fuels treatments Ranching; hunting; recreation.	King Top and Conger Mountain WSA Wild horses Old growth Bristlecone Pine forests Invasive species Military Training Areas
B6	**Accord Lakes**	BLM Private State USFS	180 16,902 151 50,085	Suppression at 1500 acres or 2500 acres depending on the fire intensity level Hazardous fuels treatments: Accord Lakes and Salina Creek WUI projects Mining; ranching; hunting; recreation. Communities at risk protection.	Fragile soils – North Horn Invasive species Fisheries SUFCO mine
B7	**Fishlake Basin**	BLM Private USFS	260 1,511 14,783	Suppression at 1500 acres or 2500 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. Communities at risk protection: numerous summer homes, resorts and recreation facilities	Sage grouse habitat, Utah Prairie dog, Southwest Willow Flycatcher Big game winter range Invasive species Riparian vegetation Sensitive fisheries
B8	**Fremont**	BLM	36,539	Suppression at 1500 acres or	Fremont Gorge WSA

		Private State	32,129 3,733	2500 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. Communities at risk protection.	Mexican Spotted Owl habitat Black Ridge communications site Big game winter range Invasive species Cultural resource sites
C1	**Twin Peaks**	BLM Private State Tribal	151,663 43,459 17,412 402	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. Communities at risk protection. Restoration projects	Sage grouse habitat Big game winter range Invasive species Kern River natural gas line Cultural resource sites
C2	**Crickets**	BLM Private State	267,608 17,108 33,463	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments Mining; ranching; hunting; recreation.	Wild horses Potential sage grouse habitat Invasive species Power lines and natural gas lines, railroad Graymont lime plant Cultural resource sites
C3	**Keg**	BLM State	76,603 8,427	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments Hunting; recreation.	Big game habitat Invasive species Cultural resource sites
C4	**Eureka**	BLM Private State	284,987 228,607 44,746	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments Mining; ranching; hunting; recreation. Communities at risk protection. Restoration projects	Pygmy rabbit, sage grouse habitat Big game winter range Invasive species Power lines and natural gas lines, railroad Cultural resource sites – Tintic Historic Mining District Sheeprock/ Tintic OHV Area Riparian vegetation
C5	**Valley Mountains**	BLM Private State	117,752 38,784 16,171	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. Communities at risk protection. Oil and Gas Exploration and development	Sage grouse habitat Big game winter range Invasive species Cultural resource sites Yuba State Park
C6	**Sanpete Valley**	BLM Private State USFS Military	80,803 200,142 27,471 396 692	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. Oil and Gas Exploration and development Communities at risk protection. Restoration projects	Big game winter range Invasive species Levan Communications Site Cultural resource sites
C7	**North Monroe**	BLM Private State USFS	32,457 42,542 7,118 66,610	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments	Big game winter range Invasive species Signal peak Communications Site

		Tribal	542	Mining; ranching; hunting; recreation. Oil and Gas Exploration and development Communities at risk protection.	Cultural resource sites Numerous recreation sites Riparian vegetation Fragile soils
C8	**Parker**	BLM Private State	133,083 15,640 116,951	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. Communities at risk protection.	Sage grouse and antelope habitat Utah prairie dog and pygmy rabbit habitat Big Hollow raptor habitat Big game winter range Invasive species Cultural resource sites Otter Creek State Park Riparian vegetation – Pine Creek (native trout)
C9	**Antimony**	BLM Private State	38,919 6,276 3,759	Suppression at 2000 acres or 3000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. Communities at risk protection.	Bonneville cutthroat trout – East Fork Big game winter and summer range Invasive species Cultural resource sites Riparian vegetation – Sevier River (blue ribbon trout stream)
C10	**Hanksville Desert**	BLM Private State NPS	1,133,985 18,960 133,505 3,218	Suppression at 3000 acres or 4000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. Communities at risk protection.	WSA – Dirty Devil River, Little Rockies, Horseshoe canyon Desert big horn sheep habitat Mexican spotted owl, Southwestern willow flycatcher, yellow-bill cuckoo habitat Antelope habitat ACECs – Beaver Box and north and south Cainville Big game winter range Invasive species Cultural resource sites Hog Springs picnic area Riparian vegetation – Fremont and Dirty devil River Fragile soils
D1	**Deep Creeks**	BLM Private State	106,232 5,181 5,379	Suppression at 3000 acres or 4000 acres depending on the fire intensity level Suppression of fires in Bristlecone pine stands to less than 50 acres Hazardous fuels treatments Ranching; hunting; recreation.	WSA – Deep Creeks Old growth Bristlecone Pine forests Bonneville cutthroat trout Big game summer range Invasive species Cultural resource sites Riparian vegetation Military Training Areas
D2	**Swasey/Fish Springs**	BLM Private State USFWS	312,636 521 8,286 179	Suppression at 4000 acres or 5000 acres depending on the fire intensity level Suppression of fires in	WSA – Swasey Mountain, Howell Peak, Notch peak Wild horses Old growth Bristlecone Pine

				Bristlecone pine stands to less than 50 acres Hazardous fuels treatments Ranching; hunting; recreation.	forests Big game winter range Invasive species Cultural resource sites Riparian vegetation Military Training Areas
D3	**Crystal Peak**	BLM Private State	340,431 7,218 35,467	Suppression at 4000 acres or 5000 acres depending on the fire intensity level Suppression of fires in Bristlecone pine stands to less than 50 acres Hazardous fuels treatments Mining; ranching; hunting; recreation. Communities at risk protection.	WSA – Wah Wah Mountains Wild horses Western Spotted Frog Old growth Bristlecone Pine forests Big game winter range Invasive species Cultural resource sites Riparian vegetation – Pruess Lake Desert Range Experimental Range (USFS) Military Training Areas
D4	**Pahvant**	BLM Private State USFS	26,060 117,585 18,392 355,940	Suppression at 4000 acres or 5000 acres depending on the fire intensity level Hazardous fuels treatments Mining; ranching; hunting; recreation. Oil and Gas Exploration and development OHV Use Communities at risk protection.	Big game winter range Invasive species Cultural resource sites Power lines Communication sites – Scipio Pass, White Pine Peak Municipal watersheds Riparian vegetation Numerous recreation facilities (USFS) Fremont Indian State Park Fragile soils
D5	**Tushar Mountains**	BLM Private State USFS Tribal	20,988 23,758 3,823 250,701 18	Suppression at 4000 acres or 5000 acres depending on the fire intensity level Hazardous fuels treatments Mining; ranching; hunting; recreation. Geothermal exploration and development OHV Use Communities at risk protection.	Big game winter and summer range Bonneville Cutthroat trout Invasive species Cultural resource sites - Bullion Canyon, Kimberly Historic Mining District Riparian vegetation Numerous recreation facilities (USFS) Fremont Indian State Park, Big Rock Candy Mountain Resort
D6	**Langdon**	BLM Private State USFS	123,012 41,395 20,113 97,064	Suppression at 4000 acres or 5000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. OHV Use Communities at risk protection.	Big game winter and summer range Bonneville Cutthroat trout Boreal toad Invasive species Cultural resource sites Communications Site – Forshea Municipal watersheds Riparian vegetation Numerous recreation facilities (USFS) Otter Creek State Park, Piute

					State Park
D7	**Lost Creek**	BLM Private State USFS Tribal	30,357 38,216 13,509 94,293 127	Suppression at 4000 acres or 5000 acres depending on the fire intensity level Hazardous fuels treatments Mining, ranching; hunting; recreation. OHV Use Communities at risk protection. Oil and Gas Exploration and development	Big game winter and summer range Invasive species Cultural resource sites Communications Site – Fishlake Triangle Riparian vegetation Numerous recreation facilities (USFS) Fragile soils
D8	**Willow Creek**	BLM Private State USFS	22,418 14,324 14,006 42,616	Suppression at 4000 acres or 5000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. OHV Use Communities at risk protection. Oil and Gas Exploration and development	Big game winter and summer range Invasive species Cultural resource sites Fragile soils
D9	**Thousand Lake/Last Chance**	BLM Private State USFS	111,338 40,474 13,480 315,590	Suppression at 4000 acres or 5000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation. OHV Use Communities at risk protection.	Big game winter and summer range T&E plants– (USFS) Invasive species Cultural resource sites Communications Site – Mount Terill Municipal watersheds – Fremont, Lyman, Torrey Riparian vegetation Numerous recreation facilities (USFS)
D10	**Henry Mountains**	BLM Private State	283,241 4,411 33,667	Suppression at 3000 acres or 4000 acres depending on the fire intensity level Hazardous fuels treatments Ranching; hunting; recreation.	WSA – Mount Ellen, Mount Pennell, Mount Hillers Bison and antelope habitat Mexican spotted owl habitat Fisheries in Fremont River Big game winter and summer range Invasive species Cultural resource sites Communications Site – South Creek Ridge, Copper Ridge, Summit Ridge, Bulldog ridge Recreation facilities – Lonesome Beaver, Dandelion Flat, McMillam Spring, Star Spring Riparian vegetation – Fremont River

4.4.3 POTENTIAL CUMULATIVE RESOURCE IMPACTS

Impacts to specific resources and local communities that could result from the Proposed Action or No Action Alternative are included in each of the resource discussions in Chapters 4.2 and 4.3.

In general, the goals and objectives of the Proposed Action are designed to create intentional, long-term beneficial cumulative impacts to most BLM resources. Management considerations concerning the use of wildland fire, utilizing appropriate the AMR, implementing fuels treatments, and working with local partners as well as communities-at-risk are all objectives developed with the underlying long-term goal of restoring fire as to its natural role in the ecosystem. Fuels management objectives include the protection of human life and property through the reduction of hazardous fuels, but also focus on moving landscapes toward a desired future condition. Utilizing the Proposed Action to integrate the Wildland Fire Management Goals stated in Chapter 2.2.2 into current management practices would advance resources toward a desired future condition and would result in long-term cumulative benefits.

As referenced in **Table 4.3** above, lands adjacent to and oftentimes within lands managed by the BLM are managed by cooperating federal or state agencies, private owners, or other private entities. Table 4.1 lists each FMU with a brief synopsis of land ownership within the general boundaries of the planning area. Also listed are potential actions or known planned actions and/or treatments by FMU that may be ongoing or scheduled for implementation in the near future by BLM and other agencies. Management priorities and/or activities considered by federal and state agencies on lands under their jurisdiction and by the public on adjacent private lands have the potential to augment or to detract from activities taking place on BLM lands. Potential cumulative impacts are discussed below in conjunction with the resources that may be affected.

In addition to the effects of the uses summarized in **Table 4.3**, cumulative effects could result from incremental impacts of the proposed action when combined with one or more of the reasonably foreseeable future actions discussed in Chapter 4.4.2 above. Because of the general nature of the information contained in Chapter 4.4.2, a more detailed list of potential and planned actions for each of the field offices within the planning area follows. The list was compiled from notices posted on the 2005 environmental bulletin board (Fillmore and Richfield Field Offices), the Fishlake National Forest schedule of proposed actions and, for the purposes of the cumulative effects analyses, the listed activities (below) represent a snapshot of the number and types of projects or actions proposed in an average year on lands within the planning area.

Richfield Field Office

- Oakley Haven Corrals – Land Use Permit; FMU – D7 Lost Creek
- Kankainen Access Road – right-of-way Grant; FMU – B8 Fremont
- Utah Great Eagle Cedar Mountain 2D Seismic Survey – Oil and Gas Exploration; FMU – D7 Lost Creek
- Hartnet Allotment Term Permit Renewal – Renew Grazing Permit; FMU – D9 Thousand Lake/Last Chance
- Pasture Canyon/Sweetwater Allotment Term Permit Renewal (Renew Grazing Permit); FMU – D9 Thousand Lakes/Last Chance
- Timber Canyon and Apple Spring Permit Renewal (Renew Grazing Permit); FMU – C6 Sanpete Valley
- DJ Hunting and Guide Services Special Recreation Permit ; FMU – D10 Henry Mountains
- National Outdoor Leadership School Special Recreation Permit; FMU – D10 Henry Mountains
- Central Utah 2d Seismic Oil and Gas Exploration; FMU – D8 Willow Creek, C5 Valley Mountains and C6 Sanpete Valley
- SMX Riot II – HD Video Film Permit; FMU – C10 Hanksville Desert

- Capitol Reef Backcountry Outfitters Special Recreation Permit; FMU C10- Hanksville Desert
- Sunrise Outfitting, Inc. Special Recreation Permit; FMU – C-10 Hanksville Desert
- Wolverine Federal Arapien Valley Oil and Gas Development; FMU – D8 Willow Creek
- Bearsears, Inc Film Permit; FMU – D10 Henry Mountains
- South Central Utah Telephone Line Construction; FMU - B8 Fremont
- Wayne County Brinkerhoff Road Construction; FMU – B8 Fremont
- Aspen Achievement Academy/Passages to Recovery Special Recreation Permit; FMU – C10 Hanksville Desert
- Riparian Protection Exclosures; FMU – D10 Henry Mountains
- Hanksville Community Communications Site Right-of-way; FMU – D10 Henry Mountains
- Durkee Spring Pipeline Livestock Water; FMU – D6 Langdon
- Alan Smart Access Road Construction; FMU – B8 Fremont
- Wolverine Twist Canyon Oil and Gas Development; FMU – D8 Willow Creek

Fillmore Field Office

- Valley Mountain West Vegetation Manipulation – Hazardous Fuels Reduction and Range Improvement; FMU – C5 Valley Mountains
- Highway 257 fence – Deseret Allotment; FMU - A1 West Desert Lowlands
- Telescope Array Cosmic Ray – University of Utah to study cosmic rays; FMU – A1 West Desert Lowlands
- Desert Mountain Fire Stabilization – Rehabilitation of burned area; FMU – A1 West Desert Lowlands
- Cedar Ridge Drill Seeding – Range Improvement; FMU – C4 Eureka
- Pacificorp camp Williams to Mona Substation – Power line maintenance; FMU – C4 Eureka
- Central Utah 2D Seismic – Geophysical Exploration, FMU – C5 Valley Mountains, C6 Sanpete Valley, C7 N. Monroe, D4 Pahvant, D7 Lost Creek, D8 Willow Creek
- Grazing Transfer – Notch Peak; FMU – D2 Swasey/ Fish Springs
- Barret Negotiated Sale – Removal of rock materials; FMU – C4 Eureka
- Low Hills vegetation Manipulation - Hazardous Fuels Reduction and Range Improvement; FMU – C4 Eureka, C5 Valley Mountains
- Gilson Mountain Fire Stabilization - Rehabilitation of burned area; FMU – C4 Eureka
- University of Utah Road Access – road improvement; FMU – A1 West Desert Lowlands, C4 Eureka
- Twin Peaks Stabilization - Rehabilitation of burned area; FMU – C1 Twin Peaks
- World Minerals ROW - road improvement; FMU – C1 Twin Peaks
- Milford Wind Corridor – Installation of wind monitoring equipment; FMU – C1 Twin Peaks, C2 Cricket Mountains
- Ash Grove Cement Co. ROW – Storage area; FMU – C4 Eureka

Fishlake National Forest

- Coleman Reservoir Dam Reconstruction; Fremont River RD
- Cooperative Fisheries Enhancement – remove nonnative trout and introduce native trout; 8 streams across the Forest
- Donkey Road Realignment; Fremont River RD
- Middle Donkey Dam Reconstruction; Fremont River RD
- North Slope Meadow Thinning; Fremont River RD
- Pleasant Creek Trailhead Improvement; Fremont River RD
- Wide Hollow vegetation Project – Hazardous Fuels; Fremont River RD

- Fishlake National Forest OHV Route Designation; Forest-wide
- Cove Fort-Sulphurdale Geothermal Leasing; Beaver Ranger District; FMU – D5 Tushar Mountains
- Elk Meadows Fuel Reduction – Hazardous Fuels; Beaver Ranger District
- Interstate I-70 Wireless Communication Sites; Beaver Ranger District; FMU – D5 Tushar Mountains
- Little Res. Vegetation – Hazardous Fuels; Beaver Ranger District; FMU – D5 Tushar Mountains
- South Fork Vegetation Treatment – Hazardous Fuels; Beaver Ranger District
- Tushar Grazing EIS; Beaver Ranger District
- Horse Hollow Hazardous Fuel Reduction; Fillmore Ranger District; FMU – D4 Pahvant
- Pioneer Hazardous Fuel Reduction; Fillmore Ranger District; FMU – D4 Pahvant
- Wild Goose Hazardous Fuel Reduction
- Fillmore Ranger District; FMU – D4 Pahvant
- Bowery Resort and Lake Shore Recreation Facilities; Fremont River Ranger District
- Castle Valley Ranch Water System; Fremont River Ranger District; FMU – D9 Thousand lake/ Last Chance
- Mytoge Mountain Vegetation Treatment – Hazardous Fuels; Fremont River Ranger District; FMU – D7 Lost Creek
- Sheep Valley Dixie harrow Treatment – Hazardous Fuels and Wildlife Habitat; Fremont River Ranger District
- Thousand Lakes Dixie harrow Treatment – Hazardous Fuels and Wildlife Habitat; Fremont River Ranger District; FMU – D9 Thousand Lakes/ Last Chance
- UM Creek Dixie harrow Treatment – Hazardous Fuels and Wildlife Habitat; Fremont River Ranger District; FMU – D9 Thousand Lakes/ Last Chance
- Seven Mile Dixie harrow Treatment – Hazardous Fuels and Wildlife Habitat; Fremont River Ranger District; FMU – D7 Lost Creek
- Brindley Flat Fuels Reduction; Richfield Ranger District; FMU – D6 Langdon
- Flat Top Dixie harrow Treatment – Hazardous Fuels and Wildlife Habitat; Richfield Ranger District; FMU – D7 Lost Creek
- Mt. Terrill Dixie harrow Treatment – Hazardous Fuels and Wildlife Habitat; Richfield Ranger District; FMU – D7 Lost Creek
- N. Clover Vegetation – Forest Products; Richfield Ranger District; FMU – D7 Lost Creek
- Quitchupah Creek Road Construction; Richfield Ranger District; FMU – D9 Thousand Lakes/ Last Chance
- Seven Mile Spruce Beetle Infestation – Forest Products; Richfield Ranger District; FMU – D7 Lost Creek

Potential Cumulative Impacts from Wildfire Suppression Activities

Depending on fire severity, suppression activities for wildfires on BLM and adjacent lands are coordinated between agencies and sometimes private entities that oversee management of those lands. The goal is to coordinate suppression activities, minimize adverse impacts as well as to identify and implement mitigation. All fire suppression activities for the BLM and cooperating agencies is coordinated through the Richfield Interagency Fire Center. In determining priorities, consideration is given to: 1) threats to life and property; 2) potential for wildfire to impact high-value resources such as critical or crucial wildlife habitat; 3) potential impacts to cultural or riparian resources; and 4) other factors such as possible social impacts.

The unplanned nature of wildfires and resultant suppression activities may have more potential for cumulative impacts to the BLM resource than planned management programs such as prescribed fire and non-fire fuels treatment. Even though restrictions are in place to protect valuable resources, because of the emergency

nature of wildland fire inadvertent impacts can occur. Continued expansion in WUI areas, increased recreational use, and expanding resource development throughout the fire planning area may require the BLM to increase suppression efforts. An increase in public use would expose a greater number of people to impacts from fire management actions on, and adjacent to, BLM-administered lands. Severe wildfires and/or suppression activities on adjacent lands with different or non-existent resource protection measures in place could also impact natural and/or cultural resources on BLM lands.

Cumulative impacts from wildfire suppression activities could include increased erosion-susceptibility of burned or compacted soils, and/or direct damage to soils and vegetation. Wildfires that burn on adjacent lands could impact BLM lands by damaging soils and vegetation to the extent that remaining native vegetation could fail to serve as a seed source for BLM lands or to provide cover for wildlife species. In areas where escaped wildfires move onto BLM lands from adjacent lands, impacts could be addressed in analysis and planning for post-fire ES&R activities.

Cumulative impacts to specific resources from the goals and objectives contained in the proposed action related to wildfire suppression activities and/or severe wildfire may include the following:

1) A general reduction in large-scale events of uncontrolled wildfire is expected from the effects of implementing the proposed action on BLM lands as well as on lands under the jurisdiction of other agencies. Fewer severe wildfires on BLM and adjacent lands would result in a cumulative decrease in smoke emissions.

2) Reasonably foreseeable actions include increased oil, gas, and mineral development activities, utility corridor development, adjacent vegetation treatments, increased recreational use, and WUI expansion adjacent to BLM-administered lands. Potential impacts to cultural resources from these actions could include an associated increase in vandalism to cultural sites, artifact collection, or damage and/or destruction of historic/cultural sites as a direct result of a particular action. Inadvertent damage from emergency suppression activities could add to the disturbance and/or possible destruction of sites.

3) Wildland fire use could have a temporary cumulative impact on recreation growth, recreation uses such as backcountry travel and hunting, and special use permits for guided activities. Wildland fire use in areas in which these activities are ongoing or planned could impact use limits until desired future conditions were met.

4) The potential cumulative effects of the proposed action on floodplain resources are closely associated with and similar to potential soil, water, and riparian-wetlands resource direct impacts. Impacts from activities such as land development, OHV and other recreational uses, as well as encroachment of invasive/non-native and noxious weeds would continue, and the effects of these activities on the above listed resources could be increased if a wildfire occurred on previously impaired lands. Resource protection measures (RPMs) designed specifically to mitigate the effects of suppression could alleviate these cumulative effects, and ES&R treatments following fire could have a positive cumulative effect on these areas by mitigating damage that has previously occurred from other activities.

5) Development and activities on privately-owned lands such as highway and utility corridor improvements, OHV use, wood cutting, hunting, other recreation, and oil/gas/mining expansion, could increase the number of wildfires. Although human-caused fires are normally limited to specific times of the year when climatic and vegetation conditions are optimum, the probability is that an increase in any of the above listed activities could result in a higher fire occurrence.

6) Reasonably foreseeable actions such as oil and gas development, increased visitation and backcountry recreational use, new or improved utility corridors, and invasive/non-native and noxious weed infestation could subject wildlife to temporary or permanent displacement and may alter habitat. Wildfires and

associated suppression actions could further impact displaced wildlife. However, hazardous fuel reductions associated with the large scale implementation of the proposed action on BLM and adjacent lands would gradually reduce the number and severity of wildfires. Achieving the desired resource conditions through the proposed action would mitigate long-term and cumulative impacts to wildlife from wildfire and associated suppression activities.

Potential Cumulative Impacts from Fuels Treatment (Prescribed Fire and Non-Fire Treatments)

Fuels treatments are designed to move each of the vegetative communities toward the desired future conditions. The maximum number of acres to be treated is listed for each FMU. These estimates are calculated based on vegetation type, the fire return interval for each vegetation type and the number of acres of each vegetation type. The goal of these treatments is to move toward a desired future condition over time. Fuels treatments will be analyzed on a site-specific basis. Wildfires will continue to occur in treated areas as part of the natural cycle, however, the anticipated cumulative change in plant communities resulting from ongoing and long-term fuels treatments would be expected to decrease the threat of severe wildfires.

In addition to BLM fuels treatment goals and objectives, the USDA Forest Service, NPS, and State of Utah FFSL have identified fuels treatment goals in current, drafted, and planned fire and fuels management plans. Fuels treatment activities completed on adjacent lands could contribute toward achievement of desired future conditions on BLM lands. The Central Utah Interagency fuels committee sets fuels treatment goals and prioritizes treatment activities. When possible, fuels treatments on BLM lands are coordinated and planned to coincide with those on adjacent lands to maximize beneficial cumulative effects. Through cooperation, prioritization of goals, and combined planned treatments, long-term environmentally beneficial impacts to entire ecosystems are anticipated.

Cumulative impacts to specific resources from the goals and objectives contained in the proposed action related to fuels treatment may include the following:

1) The overall effect of the proposed action when combined with fuels treatments on adjacent lands would be reduce potential cumulative impacts from severe wildfires, which would help maintain the naturalness of ACECs, WSAs, W&SR segments and areas with wilderness characteristics. Eventually allowing wildland fire to resume its natural role in the ecosystem could help to protect the qualities of special areas and also protect areas from the spread of invasive/non-native and noxious weeds. Treatment plans could also include cooperative agreements for treatment on adjacent lands to maximize beneficial cumulative impacts.

2) BLM-managed lands as well as other public and private lands surrounding the planning area have experienced an increase in energy and minerals development, recreational activities, backcountry road use and off-road vehicle use. This increase, along with other multiple use activities such as livestock grazing and hunting, as well as the incremental impacts of the proposed action, may result in a cumulative impact to federally listed, special status wildlife species. Because fuel treatment activities are anticipated to improve overall ecosystem health and diversity, providing additional livestock forage and habitat for wildlife in the long term, cumulative effects are expected to affect but are not likely to adversely affect federally listed species. The gradual move toward the desired future condition would result in long-term beneficial cumulative effects including a reduced risk of severe, habitat-altering wildfires.

3) Because planned fuels treatment would be timed to avoid and minimize impacts on critical habitat and breeding seasons, treatments in areas that also involved vegetation or restoration activities would not create cumulative negative impacts. It is anticipated that these combined actions would encourage long-term beneficial effects to species that would include increased biodiversity and the elimination or minimizing of invasive/non-native introduction and spread. Positive impacts from fire management actions alone are not

anticipated to offset impacts from reasonably foreseeable actions such as increased mineral/oil/gas development or an increase in recreation and backcountry travel.

4) The cumulative effects of the proposed action on water quality could include improvements in watershed health, such as an increased supply of woody debris or stream bank vegetation, and increased stream bank and channel stability. Implementation of projects on adjacent lands could also contribute to improved water quality when combined with the long-term effects of BLM fuels treatments. Impacts from increased recreational use, off-road vehicle use and invasive/non-native and noxious weeds would continue to have negative sediment load effects.

5) Past management actions, including the exclusion of wildland fire, have resulted in an existing riparian environment much different than the historical condition on BLM lands as well as on adjacent lands managed by other entities. Water diversion, impoundment, channelization, dewatering, timber and grazing practices, and invasive/non-native vegetation species have cumulatively altered riparian conditions and created non-functioning systems and those with limited functioning capability. Cumulative effects from increased development and expanded recreational use could continue to adversely impact riparian areas. However, the implementation of fuels treatments could contribute to the overall improvement of health within riparian communities by off-setting high sediment loads and increasing resistance to invasive, non-native and noxious weeds. Cumulative effects to riparian resources could include an increase in soil stability, a more sustainable supply of woody debris or stream bank vegetation, overall improvement in native vegetation composition, overall improvement in bank and channel stability, and increased functionality of riparian areas.

6) Increases in WUI, development of oil/gas/mining infrastructure, and an upsurge in recreational activities may eventually put more demands on local sources of biomass, timber, firewood, and pinyon nuts. Proposed fuels treatments when combined with treatments on adjacent lands, could cause a loss of forest harvesting opportunities.

7) As discussed in the proposed action, the beneficial effects of successful fuels treatment can include a long-term reduction in soil loss, erosion, compaction, and damage to soil crusts. Potential impacts to livestock forage from invasive/non-native and noxious weeds and introduction resulting from increased recreational use and future development could be offset by fuels treatment. Cumulative vegetative changes including an increase in palatable forage would improve the health of grazing resources and increase resistance to invasive/non-native and noxious weeds.

8) Reasonably foreseeable actions and activities on lands adjacent to BLM fuels treatments may impact visual resources in some areas. In addition, increased recreational use, development of lands for resource extraction, utility corridors, and WUI development are expected to expand road networks on BLM lands as well as on adjacent lands. These actions could magnify impacts to visual resources from fire management-related activities. However, treatments would be consistent with fire management goals to reduce the risk of severe wildfire that could potentially affect all visual classes and that could result in significant impacts on visual scenic quality. Fuels treatments would help offset cumulative impacts from the current fire management trend toward less-natural landscapes.

9) Reasonably foreseeable actions include increased recreational use, utility corridor development, and resource activities associate with oil, gas, coal and other mineral development. These activities could be associated with an increase in ground disturbance in areas containing paleontological, cultural, or historical resources. Cumulative effects associated with fuels treatments in areas that may have experienced ground disturbance from other activities would be mitigated through implementation of RPMs and also through the site-specific planning associated with prescribed fire and non-fire fuels treatments.

Potential Cumulative Impacts from Wildland Fire Use (WFU)

The Proposed Action states that suitability of naturally-ignited wildland fires to accomplish resource management goals and objectives would be determined for each candidate fire on a case-by-case basis. This suitability evaluation looks at the predicted fire behavior and the potential affects the fire may have on resources. Management actions and mitigation would be implemented to assure that a wildland fire use does not adversely impact the resources. There are several FMUs in which wildland fire use has been determined to be useful. Within the proposed action, wildland fire use is only allowed in vegetation types were fire has historically played a significant role and post fire treatments are not likely to be needed (i.e. mixed conifer, aspen, mountain brush, ponderosa pine, etc). This is less that 5% of the total planning area.

Adjacent lands managed by other agencies may or may not plan for and utilize wildland fire use. The State of Utah FFSL is in the planning stages for a comprehensive fire management plan that will set up policy and procedure for WFU on SITLA lands and possibly on adjacent private lands with signed landowner agreement. The Fishlake National Forest allows wildland fire use on the majority of the Forest.

Cumulative impacts to specific resources from the goals and objectives contained in the proposed action related to fuels treatment may include the following:

1) The overall effect of wildland fire use outlined in the proposed action when combined with wildland fire use on adjacent lands would be to reduce potential cumulative impacts from severe wildfires, which would help maintain the naturalness of ACECs, WSAs, W&SR segments and areas with wilderness characteristics. Eventually allowing wildland fire to resume its natural role in the ecosystem could help to protect the qualities of special areas and also protect areas from the spread of invasive/non-native and noxious weeds.

2) BLM-managed lands as well as other public and private lands surrounding the planning area have experienced an increase in energy and minerals development, recreational activities, backcountry road use and off-road vehicle use. This increase, along with other multiple use activities such as livestock grazing and hunting, as well as the incremental impacts of the proposed action, may result in a cumulative impact to federally listed, special status wildlife species. Because wildland fire use is anticipated to improve overall ecosystem health and diversity, providing additional livestock forage and habitat for wildlife in the long term, cumulative effects are expected to affect but are not likely to adversely affect federally listed species. The gradual move toward the desired future condition would result in long-term beneficial cumulative effects including a reduced risk of severe, habitat-altering wildfires.

3) Because candidate wildland fire use would be evaluated to minimize impacts on critical habitat and breeding seasons, wildland fire use in areas that also involved vegetation or restoration activities would not create cumulative negative impacts. It is anticipated that these combined actions would encourage long-term beneficial effects to species that would include increased biodiversity and the elimination or minimizing of invasive/non-native introduction and spread. Positive impacts from fire management actions alone are not anticipated to offset impacts from reasonably foreseeable actions such as increased mineral/oil/gas development or an increase in recreation and backcountry travel.

4) The cumulative effects of the proposed action on water quality could include improvements in watershed health, such as an increased supply of woody debris or stream bank vegetation, and increased stream bank and channel stability. Wildland fire use on adjacent lands could also contribute to improved water quality when combined with the long-term effects of wildland fire use on BLM lands. Impacts from increased recreational use, off-road vehicle use and invasive/non-native and noxious weeds would continue to have negative sediment load effects.

5) Past management actions, including the exclusion of wildland fire, have resulted in an existing riparian environment much different than the historical condition on BLM lands as well as on adjacent lands managed by other entities. Water diversion, impoundment, channelization, dewatering, timber and grazing practices, and invasive/non-native vegetation species have cumulatively altered riparian conditions and created non-functioning systems and those with limited functioning capability. Cumulative effects from increased development and expanded recreational use could continue to adversely impact riparian areas. However, the implementation of wildland fire use could contribute to the overall improvement of health within riparian communities by off-setting high sediment loads and increasing resistance to invasive, non-native and noxious weeds. Cumulative effects to riparian resources could include an increase in soil stability, a more sustainable supply of woody debris or stream bank vegetation, overall improvement in native vegetation composition, overall improvement in bank and channel stability, and increased functionality of riparian areas.

6) Increases in WUI, development of oil/gas/mining infrastructure, and an upsurge in recreational activities may eventually put more demands on local sources of biomass, timber, firewood, and pinyon nuts. Wildland fire use, when combined with treatments on adjacent lands, could cause a loss of forest harvesting opportunities.

7) As discussed in the proposed action, the beneficial effects of successful wildland fire use can include a long-term reduction in soil loss, erosion, compaction, and damage to soil crusts. Potential impacts to livestock forage from invasive/non-native and noxious weeds and introduction resulting from increased recreational use and future development could be partially offset by wildland fire use. Cumulative vegetative changes including an increase in palatable forage would improve the health of grazing resources and increase resistance to invasive/non-native and noxious weeds.

8) Reasonably foreseeable actions and activities on lands adjacent to wildland fire use may temporarily impact visual resources. In addition, increased recreational use, development of lands for resource extraction, utility corridors, and WUI development are expected to expand road networks on BLM lands as well as on adjacent lands. These actions could magnify impacts to visual resources from fire management-related activities. However, wildland fire use would reduce the risk of severe wildfire that could potentially affect all visual classes and that could result in significant impacts on visual scenic quality

9) Reasonably foreseeable actions include increased recreational use, utility corridor development, and resource activities associate with oil, gas, coal and other mineral development. These activities could be associated with an increase in ground disturbance in areas containing paleontological, cultural, or historical resources. Cumulative effects associated with wildland fire use in areas that may have experienced ground disturbance from other activities would be mitigated through implementation of RPMs and also through the site-specific evaluation and planning for each wildland fire use.

CHAPTER 5. CONSULTATION AND COORDINATION

5.1 INTRODUCTION

Issues identified for analysis within this EA are included in **Appendix A**. This appendix includes the resource concerns identified, including those resources considered as Critical Elements of the Human Environment and related issues derived from the BLM, affiliated agency reviews, and comments received.

A thorough consultation and coordination effort among agencies and public parties with interests in the process was planned and conducted to ensure the opportunity for involvement throughout the EA process. Federal, state, and local government agencies—and Tribes that create, administer, and monitor policy for these lands and adjacent lands—were among the interested parties. BLM established a coordinated collaborative effort in developing the EA by seeking the active participation from all of these parties.

5.2 PERSONS, GROUPS, AND AGENCIES CONSULTED

The BLM coordinated and collaborated with numerous federal, state, Tribal, and local government agency representatives as well as private organizations and individuals wishing to participate in the LUP amendment and FMP revision processes. The BLM contacted more than 60 federal representatives; 40 Utah state agency representatives (several in the neighboring states of Arizona, Nevada, and Colorado); 100 county and city governments across Utah; and more than 70 Tribes and Tribal representatives. Each contact received public scoping meeting notices and planning bulletins informing them of the purpose, schedule, and progress of the project. The mailing list, containing all agency points of contact, is contained in the Administrative Record within the project documentation. **Table 5.1** lists persons, agencies, and organizations consulted for purposes of the FMP EA.

TABLE 5.1: LIST OF PERSONS, AGENCIES, AND ORGANIZATIONS CONSULTED

Name	Purpose and Authorities for Consultation or Coordination	Findings & Conclusions
U.S. Environmental Protection Agency (EPA), Region 8	Consultation for responsibilities under NEPA and Section 309 of the Clean Water Act	EPA provided formal comments to the BLM during public scoping on May 17, 2004 and identified concerns that included the need to develop broad fire planning to protect local ecology, recreation, and commodity production. EPA requested that BLM consider management needs for local fuel hazards; that fire management planning would conform to interim air quality policy and local smoke management plans; and that management be developed to protect aquatic resources from adverse impacts on soil and water. EPA also identified analysis considerations associated with livestock grazing and noxious weed control. BLM considered EPA's comments and incorporated them into the Proposed Action and analysis of the alternatives.
U.S. Fish & Wildlife Service (USFWS)	Consultation under Section 7 of the Endangered Species Act (16 USC 1531) and Biological Assessment Review	USFWS is a participating party who is consulting under an agreement that tiers off the BLM and USFWS November 1, 2001 consultation agreement and March 3, 2004 alternative consultation agreement for land use planning. USFWS service has provided comment and analysis recommendations for the species list prepared by the BLM. USFWS has also reviewed, provided additional resource protection measures and concurred with the species findings within the biological assessment, completed on March 4, 2005. The Biological Opinion was completed in September, 2005.

Name	Purpose and Authorities for Consultation or Coordination	Findings & Conclusions
Tribes and Tribal Representatives within Utah and Surrounding States	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	Planning bulletins were provided to approximately 50 tribes by BLM on June 21, 2004. In addition, individual letters were sent to each tribal government on June 29, 2004 regarding BLM's intent to conduct this environmental assessment (EA) and requesting their participation and cooperation. Tribes were invited to public scoping meetings that took place from July 6, 2004 through July 14, 2004. To date, no tribal government has agreed to participate or formally consult on this project.
Utah Governor's Office of Planning and Budget—Resource Development Coordinating Committee (RDCC)	Consultation regarding on-going multi-agency planning actions and associated federal planning actions	BLM and Maxim Technologies (Maxim) met with the RDCC on June 23, 2004 to discuss the scope of proposed fire management planning and to seek input from associated state agencies that may be affected by the proposed federal actions. The Utah Division of Wildlife Resources (UDWR) and Division of Forestry, Fire, and State Lands (FFSL) indicated their desire to be involved in federal fire planning discussions (see proceeding comments). RDCC also responded to the BLM with a formal letter on July 15, 2004, which outlined the UDWR's considerations.
Utah Department of Community and Economic Development—Utah State Historic Preservation Office (SHPO)	Consultation on proposed fire management as required by the NHPA (16 USC 470)	BLM and Maxim staff met with SHPO (in June 2004 and July 2004) to discuss scope of planning and the possibility of SHPO acting as a participating party in the fire management plan (FMP) process. SHPO had determined at these meetings not to act as a participating party, but they did provide feedback on the scope and analysis of the Proposed Action. In a meeting on January 25, 2005, BLM and SHPO agreed to develop a programmatic agreement specifically addressing wildland fire use on public lands within Utah.
Utah Department of Natural Resources—Division of Forestry, Fire and State Lands (FFSL)	Consultation on fire management planning on adjacent state lands	FFSL attended the BLM statewide interdisciplinary team (IDT) meeting on June 22, 2004 and June 23, 2004, and contributed to scope and analysis discussions. BLM met with FFSL on August 24, 2004 to discuss the proposed direction of statewide fire management on public lands, as well as the need to coordinate with local BLM field offices in the development of fire management planning at a local level as identified in the FMPs that tier off the statewide land use plan (LUP) amendment. Maxim Technologies staff coordinated with FFSL staff in September 2004 and October 2004 to obtain resource data and historic wildland fire information to support BLM data and the development of the EAs.
Utah Department of Natural Resources—Division of Wildlife Resources (UDWR)	Consultation on impacts of fire management on fish and wildlife species	The UDWR, in association with the Governor's Office of Planning and Budget and RDCC, provided formal comments to BLM on July 15, 2004, and a request to be included as a participating party. BLM coordinated proposed fire management actions and considerations of wildland fire use to benefit wildlife habitat with UDWR. Maxim staff coordinated with a variety of UDWR personnel, from July 2004 through October 2004, in developing fish and wildlife resource data, GIS data, and scope of analysis within the EA. These meetings also included coordination with the UDWR Utah Natural Heritage Program.

5.3 SUMMARY OF PUBLIC PARTICIPATION

During preparation of the EAs, the public was notified of the Proposed Action. A Notice of Intent (NOI) invited participation of interested agencies, organizations, and members of the general public to assist the BLM in determining the scope of issues to be addressed. It was published in the Federal Register on April 2, 2004. The publication of this NOI initiated a public scoping comment period that ended on July 21, 2004.

A Public Involvement Plan was prepared in June 2004 to ensure an effective, consistent, and open communication process among BLM and other federal, state, and local government agencies; Native American tribes; the public; and other stakeholders. This plan not only outlined the series of open house public meetings throughout the state that would allow for comment and discussion on current and proposed fire management, but also planned for continued public involvement opportunities throughout the project.

A Planning Bulletin was also developed to advise the public of fire management project. It also described the project, encouraged public participation at the public scoping meetings, and identified opportunities and methods for submitting comments throughout the NEPA process. In addition to providing background information, the Bulletin outlined the public involvement process for the project, the schedule, a listing of public meetings, instructions on making comments and joining the mailing list, information about the project's public website, and contact information. On June 24, 2004, the Bulletin was sent to 1,149 individuals, organizations, state, county and city government agencies, and Tribal governments and groups on the BLM's mailing list. The BLM sent each Tribal government an individualized letter (dated June 29, 2004) inviting them to consult on the project. Native American consultation is ongoing. All entities on the mailing list were contacted about the project and invited to submit comments. In addition, a website has been established that displays information about this project. It is located at http://www.ut.blm.gov/fireplanning/index.htm.

5.3.1 PUBLIC MEETINGS

On June 25, 2004, a public notice was delivered as a media advisory and press release to Utah newspapers, radio stations, and one cable television station. It also went to newspapers and radio stations in Arizona, Colorado, and Nevada. The notice announced public scoping meeting dates, times, and locations, and invited the public to participate. Prior to the formal scoping process, the BLM provided a number of opportunities for federal, state, and local agencies, interested organizations, and the general public to provide input for the planning process. These opportunities included early notification of the scoping process, a lengthy comment period, a variety of venues for meetings, and newspaper reminders of meeting times and locations. Comments were received from April 2, 2004 through July 21, 2004.

From July 6, 2004 through July 14, 2004, BLM conducted five open house meetings in Moab, Cedar City, Richfield, Vernal, and Salt Lake City, Utah. These meetings were announced in a Planning Bulletin that was mailed on June 24, 2004, to more than 1,100 individuals and organizations throughout the state. News releases were issued to state and local media that communicated the purpose of the meetings, as well as the time and place of each meeting. Further, the Utah BLM webpage advertised the meetings and scoping period. Approximately 700 subscribers of the Utah BLM electronic newsletter ("E-Briefs") received related information. News releases were issued to state and local media that communicated the purpose of the meetings, as well as the time and place of each meeting. A series of Public Scoping Meetings were held across the state according to the schedule in **Table 5.2**.

TABLE 5.2: PUBLIC SCOPING MEETINGS

Date	City	Facility	Address
July 6, 2004	Moab	BLM Field Office	82 East Dogwood
July 7, 2004	Cedar City	Heritage Center, Festival Hall 1	90 North Main
July 8, 2004	Richfield	BLM Field Office	150 East 900 North
July13, 2004	Vernal	Western Park	302 West 200 South
July 14, 2004	Salt Lake City	BLM Field Office	2370 South 2300 West

5.3.2 PUBLIC COMMENTS

During the public scoping period, comment letters were received from the RDCC and from UDWR in conjunction with RDCC. There were 91 comments identified from 20 letters received during the scoping process. A comment summary table is found in the Scoping Report. The letters received can be found in the Administrative Record.

A complete analysis of the comments, list of commenters, and response to public comment will be included as a part of this EA document once the public comment and review period is concluded.

5.4 LIST OF PREPARERS

The BLM worked with an environmental consultant Maxim Technologies to support Utah BLM on this FMP EA. Therefore, the preparers of this EA included a combination of BLM and contract personnel.

5.4.1 BLM PREPARERS

BLM's IDT assisted in the preparation of this EA and with the development and evaluation of the proposed fire management direction. BLM participants and their responsibilities are listed in **Table 5.3**. BLM also assigned a contracting officer's representative and technical project lead with primary responsibilities for oversight of contractors, agency collaboration, and NEPA process.

TABLE 5.3: BLM PREPARERS

Name	Title	Document Section Responsibility
Jolie Pollet	Project Manager	Technical coordination, quality control, vegetation, fire ecology, Proposed Action, resource protection measures
Matthew Higdon	NEPA Planner	Technical coordination, quality control, planning
Rick Higginbotham	IDT Leader	IDT Leader
Linda Chappell	Fuels Specialist	IDT Leader, Air quality/smoke
Harvey Gates	Supervisory Rangeland Specialist	Livestock grazing, invasive and noxious weeds, vegetation, water quality, watershed and soils
Suzanne Grayson	Wildlife Biologist	Special status species, wildlife
Justin Seastrand	GIS Specialist	GIS
Joelle McCarthy	Archeologist	Native American concerns, cultural resources
Justin Johnson	Fuels Specialist	Fire and fuels
Dave Whitaker	Rangeland Specialist	Livestock grazing, vegetation, special status plant species

Name	Title	Document Section Responsibility
Chris Colton	Rangeland Specialist	Livestock grazing, vegetation, water quality and soils
Vearl Christiansen	Rangeland Specialist	Livestock grazing, vegetation
Bob Bate	Rangeland Specialist	Livestock grazing, vegetation
Mark Pierce	Wildlife Biologist	Wildlife habitat, special status animal species
Larry Greenwood	Wildlife Biologist	Wildlife habitat, special status plant species
Warren Sorenson	WUI Specialist	Wildland urban interface
Russ Ivie	Fuels Specialist	Fire and fuels
Craig Harmon	Archeologist	Cultural resources and Native American concerns

5.4.2 MAXIM TECHNOLOGIES PREPARERS

Maxim Technologies IDT (**Table 5.4**) worked with BLM's IDT to provide NEPA compliance support and documentation, environmental assessments of potentially affected resources, analysis of GIS data, and maps.

TABLE 5.4: MAXIM TECHNOLOGIES PREPARERS

Name	Title	Document Section Responsibility
Jim Melton	Project Manager	Planning, National Environmental Policy Act (NEPA)
David Steed	Asst. Project Manager	U.S. Fish and Wildlife consultation, planning, NEPA
Mike Egan	Asst. Project Manager	Planning, livestock grazing, cultural, Native American religious concerns
Susan Hatch	Biologist	Special status species, fish and wildlife, vegetation
Fred Gifford	GIS Coordinator	GIS, database
Cameo Flood	Forester	Forestry, Vegetation, Invasive Species
Valerie Waldorf	Lead GIS Specialist	GIS, maps
Wynn John	Environmental Engineer	Air quality, soil, water
Craig Clement	Geologist	Water, soils, geology
Keith Clapier	Vegetation Specialist	Vegetation, forestry, invasive Species
Tennille Flint	Biologist	Wetlands, wilderness study areas, wilderness, recreation, areas of critical environmental concern
Nancy Linscott	Socioeconomics Specialist	Socioeconomics, environmental justice
Dale-Marie Herring	Technical Writer/Coordinator	Writing, editing, coordination

CHAPTER 6. ACRONYMS, GLOSSARY AND REFERENCES

6.1 ACRONYMS

ACEC	Area of Critical Environmental Concern
AMR	Appropriate Management Response
BLM	Bureau of Land Management
CAA	Clean Air Act
DWFC	Desired Wildland Fire Condition
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EO	Executive Order
ESA	Endangered Species Act
ESR	Emergency Stabilization and Rehabilitation
FLPMA	Federal Land Policy and Management Act
FMP	Fire Management Plan
FMU	Fire Management Unit
FRCC	Fire Regime Condition Class
GAP	Gap Analysis Program
IDT	Interdisciplinary Team
LUP	Land Use Plan
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
OHV	Off-highway Vehicle
PM	Particulate Matter
PM_{10}	Fine Particulates with an Aerodymanic Diamater of 10 Micrometers or Less
$PM_{2.5}$	Fine Particulates with an Aerodymanic Diamater of 2.5 Micrometers or Less
RDCC	Resource Development Coordinating Committee
RFAS	Reasonably Foreseeable Action Scenario
RFO	Richfied Field Office
RMP	Resource Management Plan
ROI	Region of Influence
RPM	Resource Protection Measure
SMP	Smoke Management Plan
SSS	Special Status Species
TMDL	Total Maximum Daily Load
UDEQ	Utah Department of Environmental Quality
UDWR	Utah Division of Wildlife Resources

USFWS U.S. Fish and Wildlife Service

WSA Wilderness Study Area

WUI Wildland Urban Interface

6.2 GLOSSARY

Agency Any federal, state, or county government organization participating with jurisdictional responsibilities.

Air Quality The characteristics of the ambient air (all locations accessible to the general public) as indicated by concentrations of the six air pollutants for which national standards have been established (e.g., particulate matter, sulfur dioxide, nitrogen dioxide, ozone, carbon monoxide, and lead), and by visibility in mandatory federal Class I areas. For the purposes of the Utah Smoke Management Plan, concentrations of particulate matter are taken as the primary indicators of ambient air quality.

Alternative One of at least two proposed means of accomplishing planning objectives.

Ambient Air Literally, the air moving around us; the air of the surrounding outside environment.

Analysis The examination of existing and/or recommended management needs and their relationships to discover and display the outputs, benefits, effects, and consequences of initiating a proposed action.

Appropriate Management Response (AMR) Any specific action suitable to meet Fire Management Unit (FMU) objectives. Typically the AMR ranges across a spectrum of tactical options (from monitoring to intensive management actions). The AMR is developed by using Fire Management Unit strategies and objectives identified in the Fire Management Plan.

Area of Critical Environmental Concern (ACEC) An area of public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and provide safety from natural hazards.

Aspect Direction towards which a slope faces.

Assessment The act of evaluating and interpreting data and information for a defined purpose.

Biological Treatment Biological treatment of vegetation could typically employ grazing by cattle, sheep, or goats, but as technology progresses, it may also include insects, but would not include the use of invertebrates or microorganisms.

Biomass The dry weight of plants in a unit area.

Brush A collective term that refers to stands of vegetation dominated by shrublands, shrubby woody plants, or low-growing trees.

Buffer Zones An area of reduced vegetation that separates wildland from vulnerable residential or business developments or other high-value areas. This barrier is similar to a greenbelt in that it is usually used for another purpose such as agriculture, recreation areas, parks, or golf courses.

Cabling Same as chaining, except a cable is used instead of an anchor chain (see chaining).

Chaining The process of modifying vegetation by pulling an anchor chain between two crawler tractors, thus reducing tall-growing, brittle vegetation and enhancing grasses, forbs, and sprouting shrubs.

Climax A terminal stage of ecological succession in which the vegetation association remains stable over a relatively long period. This is relatively rare in Utah's fire-adapted communities.

Closure Legal restriction – but not necessarily elimination – of specified activities such as smoking, camping, or entry that might cause fires in a given area.

Collaboration A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support, for managing public and other lands.

Composition The numbers and kinds of plants and animals in an area.

Condition Class (CC) CC is a classification of the amount of departure from the natural condition. The three classes are based on low (CC 1), moderate (CC 2), and high (CC 3) departure from the central tendency of the natural (historical) regime. See: www.frcc.gov.

Critical Habitat Federally-mandated (under the Endangered Species Act of 1973 [ESA], as amended) designation for threatened or endangered species that is proposed, designated, and managed by the U.S. Fish and Wildlife Service (USFWS).

Critical Seasonal Use Area Designation provided by the Utah Division of Wildlife Resources for the most important / valuable big game seasonal use areas in the state that they manage.

Crown Fire (Crowning) The movement of fire through the crowns (top) of trees or shrubs more or less independently of the surface fire.

Cultural Resources Those resources of historical, archaeological, or paleontological significance. Non-renewable elements of the physical and human environment including archaeological remains (evidence of prehistoric or historic human activities) and sociocultural values traditionally held by ethnic groups (sacred places, traditionally used raw materials, etc.).

Cumulative Effects Cumulative effects result from the impacts of past, present, and reasonably foreseeable future activities combined with the projected direct and indirect effects of each alternative considered.

Direct Effects Direct effects are those consequences that are expected to occur following implementation of an alternative. Direct effects are caused by the action and occur at the same time and place as the action.

Disturbance Any relatively discrete event, either natural or human-induced that causes a change in the existing condition of an ecological system.

Ecosystem An arrangement of organisms defined by the interactions and processes that occur between them. Ecosystems are often defined by their composition, function, and structure.

Ecosystem Sustainability The ability to sustain diversity, productivity, resilience to stress, health, renewability, and/or yields of desired values, resource uses, products, or services from an ecosystem while maintaining the integrity of the ecosystem over time.

Emergency Stabilization and Rehabilitation (ESR) Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources after unplanned wildfires.

Endangered Species Any animal or plant species in danger of extinction in a portion of its range. This is a federal designation (under the ESA as amended). Most of these species fall under the jurisdiction of the USFWS.

Endemic A species restricted to a given geographical location and which is native to that locale.

Environment All that surrounds an organism and interacts with it.

Environmental Assessment (EA) EAs were authorized by the National Environmental Policy Act (NEPA) of 1969. They are concise, analytical documents prepared with public participation that determine whether an environmental impact statement (EIS) is needed for a particular project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements.

Environmental Impact Statement (EIS) EISs were authorized by NEPA. Prepared with public participation, EISs assist decision makers by providing information, analysis, and an array of action alternatives, allowing managers to see the probable effects of decisions on the environment. Generally, EISs are written for large-scale actions or geographical areas.

Environmental Justice 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. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies.

Ephemeral A stream that flows only in direct response to precipitation, and whose channel is above the water table at all times.

Fine (Light) Fuels Fast-drying fuels, generally with a comparatively high surface area-to-volume ratio, which is less than ¼-inch in diameter and has a time lag of one hour or less. These fuels readily ignite and are rapidly consumed by fire when dry.

Fire Intensity A general term relating to the heat energy released by a fire.

Fire Management Plan (FMP) A plan which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans. It defines a program to manage wildland fires (wildfire, prescribed fire, and wildland fire use). The plan is supplemented by operational plans, including but not limited to preparedness plans, preplanned dispatch plans, and prevention plans. Fire Management Plans assure that wildland fire management goals and components are coordinated.

A FMP is a functional activity plan for the fire management program. The FMP is the primary tool for translating programmatic direction developed in the land management plan into on-the-ground action. The FMP synthesizes broad fire management goals and places them into a strategic context. Criteria for making initial action decisions must be a component of the FMP.

Fire Management Unit (FMU) Any land management area definable by objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, major fire regime groups, etc., that set it apart from management characteristics of an adjacent unit These units may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives.

Fire Regime The fire pattern across the landscape, characterized by occurrence interval and relative intensity. Fire Regimes result from a unique combination of climate and vegetation, and exist on a continuum from short-interval, low-intensity fires to long-interval, high-intensity fires.

Fire Regime Groups The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. The nationals, coarse-scale classification of fire regime groups commonly used includes five groups. These five regimes include:

I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced);

II – 0-35 year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

III – 35-100+ year frequency and mixed severity (less than 75% of the dominant overstory vegetation replaced);

IV – 35-100+ year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

V – 200+ year frequency and high (stand replacement) severity. (See *www.frcc.gov*)

Fire Return Interval The number of years between two successive fires in a designated area, also referred to as fire interval.

Fire Season 1) Period(s) of the year during which wildland fires are likely to occur, spread, and affect resource values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by state or local authority.

Fire Severity A product of fire intensity and residence time at a site. Severity denotes the effects, from low to high, of fire on the soil and vegetation components of a site. It is the degree to which a site has been altered or disrupted by fire.

Fire Use The combination of wildland fire use and prescribed fire application to meet resource objectives. See wildland fire use.

Fireline A linear fire barrier that is cleared of fuels and scraped or dug to mineral soil. Also called control line, containment line or line.

Forage Vegetation of all forms available and of a type used for animal consumption.

Forbs Plants with soft, rather than permanent, woody stems that are not grass or grass-like plants.

Forest Products Woodland and timber products, such as posts, poles, firewood, Christmas trees, and sawlogs.

Fuel A combustible material, including vegetation such as grass, leaves, ground litter, plants, shrubs, and trees that feed a fire. (See Surface Fuels.)

Fuel Reduction Manipulation, including combustion and/or or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

Fuels Management The practice of evaluating, planning, and executing the treatment of wildland fuel to control flammability and reduce the resistance to control through mechanical, chemical, biological, or manual means, or by prescribed and wildland fire, in support of land management objectives.

Fuel Type An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

Geographic Area A political boundary designated by the wildland fire protection agencies, where these agencies work together in the coordination and effective utilization of resources. See www.fs.fed.us/fire/reports.shtml for a listing of and links to geographic area coordination centers.

Goal A concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad, general terms (usually not quantifiable) and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principle basis from which objectives are developed.

Grazing Permit An authorization that allows grazing on public lands. Permits specify class of livestock on a designated area during specified seasons each year. Permits are of two types: preference (10 year) and temporary non-renewable (one year).

Guideline Actions or management practices that may be used to achieve desired outcomes, sometimes expressed in best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use decision unless the plan specifies that they are mandatory. Guidelines for grazing administration must conform to 43 CFR 4180.2

Habitat A specific set of physical conditions in geographical area(s) that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are: food, water, cover and living space.

Implementation Plan A sub-geographic or site-specific plan written to implement decisions made in a land use plan. Implementation plans include both activity plans and project plans.

Incident A human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

Indirect Effects Consequences expected to occur following implementation of an alternative. Indirect effects are caused by the action and occur later in time or farther from the activity.

Interdisciplinary Team (IDT) A team representing several disciplines to ensure coordinated planning of the various resources.

Ladder Fuels Fuels that provide vertical continuity between strata and allow fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. Ladder fuels help initiate and assure the continuation of crowning.

Land Use Plan (LUP) A set of decisions that establish management direction for land within an administrative area. An assimilation of land-use-plan-level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. The term includes resource management plans (RMPs) and management framework plans (MFPs).

Landscape An area of interacting and interconnected patterns of habitats (ecosystems) that are repeated because of the geology, land form, soil, climate, biota, and human influences throughout the area. Landscape structure is formed by disturbance events, successional development of landscape structure, and flows of energy and nutrients through the structure of the landscape. A landscape is composed of watersheds and smaller ecosystems. It is the building block of biotic provinces and regions.

Large Fire 1) For statistical purposes, a fire burning more than 100 acres. 2) A fire burning with a size and intensity such that its behavior is determined by interaction between its own convection column and weather conditions above the surface.

Light (Fine) Fuels	Fast-drying fuels, generally with a comparatively high surface area-to-volume ratio, which is less than ¼-inch in diameter and has a timelag of one hour or less. These fuels ignite readily and are rapidly consumed by fire when dry.
Litter	Top layer of the forest, scrubland, or grassland floor, directly above the fermentation layer, composed of loose debris of dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.
Long Term	Defined in this document as 10 years or more. This applies to any long-term use.
Management Concern	An issue, problem, or condition that constrains the range of management practices identified by the U.S. Forest Service (USFS) in the planning process.
Management Direction	A statement of multiple-use and other goals and objectives, associated management prescriptions, and standards and guidelines for attaining them.
Management Framework Plan	A land use plan for public lands administered by BLM that provides a set of goals, objectives, and constraints for a specific planning unit or area; a guide to the development of detailed plans for the management of each resource. This form of plan is now being replaced with RMPs.
Management Practice	A specific activity, measure, course of action, or treatment.
Mechanical Treatment	Mechanical treatments of vegetation employ several different types of equipment to suppress, inhibit, or control herbaceous and woody vegetation. For the purposes of this plan, mechanical treatments may include employing the following: cabling, chaining, disking (or disk plowing), bulldozing, mowing, beating, crushing, chopping or shredding vegetation using a variety of mechanized equipment.
Monitoring Plan	The process of tracking the implementation of land use plan decisions and collecting and assessing data and/or information necessary to evaluate the effectiveness of land use planning decisions.
National Ambient Air Quality Standards (NAAQS)	Standards for maximum acceptable concentrations of pollutants in the ambient air to protect public health with an adequate margin of safety, and to protect public welfare from any known or anticipated adverse effects of such pollutants (e.g., visibility impairment, soiling, materials damage, etc.) in the ambient air.
National Environmental Policy Act (NEPA)	The basic national law for protection of the environment, passed by Congress in 1969. It sets policy and procedures for environmental protection, and authorizes EISs and EAs to be used as analytical tools to help federal managers make decisions on management of federal lands.
Naturalness	An area that generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable (Section 2[c], Wilderness Act).
Non-fire fuel treatments	Includes manual, mechanical, biological, chemical, and seeding actions to reduce or alter fuels.

Objective A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

Off-highway Vehicle Any motorized vehicle designated for or capable of cross-country travel over lands, water, sand, snow, ice, marsh, swampland, or other terrain excluding: (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle used in national defense.

Old Growth A wooded area, usually greater than 200 years of age that has never been altered or harvested by humans. An old-growth forest often has large individual trees, a multi-layered crown canopy, and a significant accumulation of coarse woody debris including snags and fallen logs. Utah BLM will adopt the USFS old-growth definitions and identification standards per the USFS document *Characteristics of old-growth forests in the intermountain region* (April 1993). In instances where the area of application in the previous document doesn't apply to specific species (e.g., *Pinus edulis*), use the document *Recommended old-growth definitions and descriptions: UDSA Forest Service southwestern region* (Sept.1992).

Perennial A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Planning Area One or more planning units for which MFPs were prepared under previous BLM planning procedures.

Prescribed Fire Any fire ignited by management actions under certain predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. A written prescribed fire plan must exist, and NEPA requirements must be met prior to ignition.

Prescription Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include a combination of safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Prevention Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards.

Public Lands Any lands or interest in lands outside of Alaska owned by the United States and administered by the Secretary of the Interior through the BLM, except located on the Outer Continental Shelf and lands held for the benefit of Indians.

Public Participation The process of attaining citizen input into each planning document development stage. It is required as a major input into the BLM's planning system.

Range Improvements (Structural / Nonstructural)	Any activity or program on or relating to rangelands designed to improve forage production, change vegetation composition, control patterns of use, provide water, stabilize soil and water conditions, and enhance habitat for livestock, wildlife, and wild horses and burros. Rangeland improvements include non-structural land treatments (such as chaining, seeding, and burning), and structural (such as stockwater developments, fences, and trails).
Rangeland	Land dominated by vegetation that is useful for grazing and browsing by animals. "Range" and "rangeland" are used interchangeably.
Raptors	Birds of prey, such as the eagle, falcon, hawk, owl, or vulture.
Recreation Opportunities	Favorable circumstances enabling visitors' engagement in a leisure activity to realize immediate psychological experiences and attain more lasting, value-added beneficial outcomes.
Region	May be any geographical area larger than a planning area (socioeconomic profile area, sub-state, state, multi-state, or national), appropriate for comparative area analysis and for which information is available. Regions may be different for different resources or subject matter analysis.
Rehabilitation	The activities necessary to repair damage or disturbance caused by wildfires or the wildfire suppression activity.
Resource Area	A geographic portion of a BLM district. An administrative subdivision whose manager has primary responsibility for day-to-day resource management activities and resource use allocations. In most instances it is the area for which RMPs are prepared and maintained.
Resource Management Plan (RMP)	A document prepared by field office staff with public participation and approved by field office managers that provides general guidance and direction for land management activities at a field office. The RMP identifies the need for fire in a particular area and for a specific benefit.
Resources	1) Personnel, equipment, services, and supplies available or potentially available for assignment to incidents. 2) The natural resources of an area, such as timber, grass, watershed values, recreation values, and wildlife habitat.
Retardant	A substance or chemical agent that reduces the flammability of combustibles.
Riparian Habitat	An environment growing near streams, reservoirs, ponds, etc. that provides food, cover, water, and living space (permanent or intermittent). It is usually unique or limited in arid regions and is, therefore, of great importance to a wide variety of wildlife.
Seeding (and Planting)	Involves the introduction of seeds and plants to a site that alters existing plant communities and influences successional processes.

Sensitive Species Species not yet officially listed but that are undergoing status review for listing on the U.S. Fish and Wildlife Service official threatened and endangered list; species whose populations are small and widely dispersed or restricted to a few localities; and species whose numbers are declining so rapidly that official listing may be necessary.

Severity Degree to which a site has been altered or disrupted by fire; loosely, a product of fire intensity and residence time (duration) of the fire. Severity denotes the effects, from low to high, of fire on the soil and vegetation components of a site.

Short Term Defined in this document as one to five years. This applies to any "short-term" use.

Slash Debris left after logging, pruning, thinning, or brush cutting; includes logs, chips, bark, branches, stumps, and broken understory trees or brush.

Smoke Management 1. The policies and practices implemented by air and natural resource managers directed at minimizing the amount of smoke entering populated areas or impacting sensitive sites, avoiding significant deterioration of air quality and violations of National Ambient Air Quality standards, and mitigating human-caused visibility impacts in Class I areas.

2. Conducting a prescribed fire under fuel moisture and meteorological conditions, and with firing techniques that keep the smoke's impact on the environment within acceptable limits. This also includes removing and/or reducing fuels before applying fire, which further reduces smoke emitted.

Soil Compaction Increasing the soil bulk density, and concomitantly decreasing the soil porosity, by the application of mechanical forces to the soil.

Soil Disturbance Physical disturbance of the vegetation or soil surface by any action, usually via mechanical or manual tools. Includes all activities except casual use, wildland fire, and prescribed fire treatments. See Surface Disturbance.

Special Recreation Management Areas Recreation management areas that receive emphasis and priority in BLM's recreation planning and management efforts. The recreation resources in these areas require explicit management to provide specified recreation setting, activity, and experience opportunities. Recreation management objectives will provide explicit guidelines with respect to the existing opportunities and problems in these areas. RMPs will subsequently be prepared for special recreation management areas using RMP objectives for guidance.

Special Status Species (SSS) Includes proposed species, listed species, and candidate species under the ESA; state-listed species; and BLM state director-designated sensitive species (see BLM Manual 6840, Special Status Species Policy).

State Lands Lands controlled or administered by the State of Utah.

Strategy The science and art of command as applied to the overall planning and conduct of an incident.

Structure The sizes, shapes, and/or ages of the plants and animals in an area.

Succession Observed process of change in the species structure (and composition) of an ecological community over time. This is often described without the impacts of natural disturbance, which can be critical to a fire-adapted system.

Suppression All the work of extinguishing or confining a fire.

Surface Disturbance Any surface disturbing activity (does not include fire).Disturbance of the vegetative or soil surface by any action. Includes all activities but casual use and wildland fire. See Soil Disturbance.

Surface Fuels Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branchwood, downed logs, and stumps interspersed with or partially replacing the litter.

Sustainability The ability to maintain a desired condition or flow of benefits over time.

Tactics Deploying and directing resources on an incident to accomplish the objectives designated by strategy.

Total Maximum Daily Load (TMDL) An estimate of the total quantity of pollutants (from all sources: point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality criteria.

Values at Risk Include property, structures, physical improvements, natural and cultural resources, community infrastructure, and economic, environmental, and social values.

Vegetation Treatment Changing the characteristics of an established vegetation type to improve rangeland forage, wildlife habitat resources and/or to reduce fuels. Treatments are designed for specific areas and differ according to the area's suitability and potential. The most common land treatment methods alter the vegetation by chaining, , burning, spraying with herbicides and/or plowing, followed by seeding with well-adapted desirable plant species.

Vegetation Plants in general or the sum total of the plant life above and below ground in an area.

Visibility The greatest distance in a given direction where it is possible to see and identify with the unaided eye a prominent dark object against the sky at the horizon.

Visual Resource Management — Management classes are determined on the basis of overall scenic quality, distance from travel routes, and sensitivity to change. *Class I:* Provides primarily for natural ecological changes only. It is applied to wilderness areas, some natural areas, and similar situations where management activities are to be restricted. *Class II:* Changes in the basic elements caused by a management activity should not be evident in the characteristic landscape. A contrast may be seen but should not attract attention. *Class III:* Changes in the basic elements caused by a management activity may be evident in the characteristic landscape, but the changes should remain subordinate to the visual strength of the character. *Class IV:* Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape. *Class V:* Change is needed. This class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding landscape.

Wetlands — Lands including swamps, marshes, bogs, and similar areas, such as wet meadows. They also include river overflows, mud flats, and natural ponds.

Wilderness Area — An area officially designated as wilderness by Congress. Wilderness areas would be managed to preserve wilderness characteristics and shall be devoted to the public purposes of recreation, scenic, scientific, educational, conservation, and historical use.

Wilderness Study Area — Areas under study for possible inclusion as a wilderness area in the National Wilderness Preservation System.

Wilderness — An area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of undeveloped federal land retaining its primeval character and influence without permanent improvements or human habitations.

Wildfire — An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out.

Wildland — An area in which development is essentially non-existent, except for roads, railroads, powerlines, and similar transportation facilities. Structures, if any, are widely scattered.

Wildland Fire Management Program — The full range of activities and functions necessary for planning, preparedness, emergency suppression operations, and emergency rehabilitation of wildland fires, and prescribed fire operations, including natural fuels management to reduce risks to public safety and to restore and sustain ecosystem health.

Wildland Fire Situation Analysis — A decision making process that evaluates alternative management strategies against selected criteria (e.g., safety, environmental, social, political, economic), and resource management objectives. Utilized in managing a wildfire.

Wildfire suppression An appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildfire suppression activities provide for firefighter and public safety as the highest consideration, but minimize loss of resource values, economic expenditures, and/or the use of critical firefighting resources.

Wildland Fire Any non-structure fire that occurs in the wildland. This includes wildfire, wildland fire use and prescribed fire.

Wildland Fire Use The application of the appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in predefined geographic areas outlined in an FMP. Operational management is described in the wildland fire implementation plan. Wildland fire use is not to be confused with fire use, a broader term encompassing more than just wildland fires.

Wildland Urban Interface (WUI) The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Woodland Forest lands stocked with other than timber species (i.e. pinyon, juniper, mountain mahogany, etc.). A plant community in which, in contrast to a typical forest, the trees are often small, and relatively short compared to their crown (i.e., pinyon, juniper). Uses of the woodland products are generally limited to firewood, posts, and harvest of fruit (pinyon nuts).

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Appendix A
Interdisciplinary Team Analysis Record Checklist

INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST

Project Title: Richfield Fire Management Plan Environmental Assessment

NEPA Log Number: Richfield Field Office

File/Serial Number:

Project Leader: Rick Higginbotham, Linda Chappell

FOR EAs/CXs: NP: not present; NI: resource/use present but not impacted; PI: potentially impacted

STAFF REVIEW OF PROPOSAL:

NP/ NI/ PI	Resource	Date Reviewed	Signature	**Review Comments** (required for all NIs and PIs. PIs require further analysis.)
CRITICAL ELEMENTS				
PI	Air Quality	11.1.2004	Linda Chappell	This proposal would potentially impact air quality and would be discussed further in the environmental assessment (EA). Potential impacts: smoke particulates, visibility and SUFCO Mine. All types of fires (wildfire, wildland fire use and prescribed fire) emit particulates and gases into the air. This could impact the health of people in adjacent and downwind communities. Smoke could temporarily impair visibility along roadways. It could impact visibility as well as exceed state and national requirements for non-attainment and Class I airsheds. *Smoke Particulates Impacts*: Wildfires would continue to occur and continue to emit large amounts of smoke which may not meet state and national regulations for air quality. This is an emergency action and these emissions are outside the scope of this document. Fuels reduction treatments are designed to limit smoke emissions either by reducing the amount of fuels burned, the way the fuel is burned, the seasonality of when the fuel is burned, or by treating mechanically to avoid burning all together. All of these actions are modeled and analyzed at the project level, then designed to meet state and national regulations. Some impacts on air quality would occur, but treatments are designed to fall within all air quality regulations. Wildland fire use is also regulated at the project level. One of the go/no go decision questions asks if the proposed wildland fire use has been approved through the state air quality regulators. The state only gives approval if they believe that no air quality regulations would be exceeded by allowing that fire to accomplish specific resource management objectives. *Visibility Impacts*: Wildfires that may pose a visibility impact to roadways are dealt with through mitigation as quickly as possible. Again, this is an emergency action and outside the scope of this document. If roads are likely to be affected, the agencies plan in their contingency section of the prescribed fire burn plan how to safely complete the burn. This same issue is covered during the development of a wildland fire implementation plan on a wildland fire use project.
PI	Areas of Critical Environmental Concern	11.1.2004	Steve Bonar, Tim Finger	This proposal would potentially impact variety of resources that the ACEC was created to protect and would be discussed further in the EA. Potential impacts: relic vegetation, wildlife or cultural resources. The Richfield Field Office (RFO) manages four designated areas of critical environmental concern (ACECs). In the course of public scoping for the new RFO Resource Management Plan (RMP), 16 additional areas were found to possess relevant

NP/ NI/ PI	Resource	Date Reviewed	Signature	**Review Comments** (required for all NIs and PIs. PIs require further analysis.)
				and important values as defined in 43 CFR 1613. The FFO manages designated ACECs. Since designation and management of ACECs is a management priority for BLM, protective management considerations that pay particular attention to the identified relevant and important values is a particular concern. Impacts depend on particular resources within that ACEC deemed critical (e.g. relict vegetation, wildlife, cultural, etc.).
PI	Cultural Resources	11.1.2004	Joelle McCarthy	This proposal would potentially impact national historic properties and would be discussed further in the EA (see specialist report).
NI	Environmental Justice	11.1.2004	Rick Higginbotham	The Proposed Action would not disproportionately affect any particular population. Environmental effects such as air quality would affect the area's population equally, without regard to ethnicity or income level.
NI	Farmlands (Prime or Unique)	11.1.2004	Brant Hallows	This proposal would not impact prime or unique farmlands. The BLM manages land in the planning area that would qualify as prime or unique farmland. However, there is nothing in the action that would irreversibly convert any BLM lands to non-agricultural use or result in the potential loss of prime farmlands, as defined by the Farmland Protection Policy Act.
NI	Floodplains	11.1.2004	Brant Hallows	This proposal would not impact floodplains. Floodplains exist throughout the planning area but because actions in this proposal and alternative would not impact the functionality of floodplains, consistent with Executive Order (EO) #11988, this critical element would not be impacted. The proposed action and alternatives include provisions to avoid adverse effects and incompatible development in floodplains, consistent with the EO that mandates that agency actions minimize potential harm to or within the floodplain; reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore/preserve the natural and beneficial values served by floodplains.
PI	Invasive, Non-native Species	11.1.2004	R.B. Probert, Burke Williams	This proposal would potentially impact invasive and non-native plants species would be discussed further in the EA. Potential impacts include increased infestation/introduction following fire. Removal of vegetation substantially increases the potential for infestation or introduction of noxious weeds into an area by removing vegetation that is competitive to noxious weeds. It is very important to reestablish vegetative competition to limit the spread or introduction of noxious weeds. Reseeding takes into account competition from invasive introduced weeds such as cheatgrass, and knapweed and that readily invade burned areas. Once a site is dominated by invasive species, succession would not proceed toward the original community. Noxious and or invasive species not only change the fire frequency of the site but also the fire intensity and the extent of the area likely to burn in the future. In this situation it may be necessary to reseed with adapted species (native and non-native) to stabilize the site, prevent soil erosion and reverse the trend that leads to monocultures on invasive and noxious plant species. The degree to which the potential for invasion of invasive species occurs depends to a large degree upon the vegetative type burned. Vegetative types with little understory such as pinyon and juniper woodlands and big sage are much more prone to invasive species than types that have a good understory of fire-resistant and competitive plants. In all circumstances, all seed used for restoration purposes needs to be certified weed free.
PI	Native American Religious	11.1.2004	Joelle McCarthy, Craig	This proposal would potentially impact Native American religious concerns and would be discussed further in the EA (see specialist report). Potential impacts: traditional use

NP/ NI/ PI	Resource	Date Reviewed	Signature	**Review Comments** (required for all NIs and PIs. PIs require further analysis.)
	Concerns		Harmon	of vegetation and cultural or religious sites.
PI	Threatened, Endangered, or Candidate Plant Species	11.16.2004	Larry Greenwood, Leroy Smalley, Dave Whitaker	This proposal would potentially impact threatened, endangered or candidate (TEC) plant species in the Richfield Support Center and would be discussed further in the EA. Potential impacts are: listed/candidate species and their habitats from wildfire and suppression (unplanned actions). This proposal would not impact TEC plant species in the Henry Mountains area. Most candidate species are located in desert areas that most likely would not burn. Candidate species located on the Henry Mountains are located in the burn area of 2003. This proposal would not impact TEC plants species in the Fillmore Field Office (FFO). BLM lands within the FFO contain no plant species that are federally listed as threatened and endangered (T&E) or proposed as such. Therefore, there is no effect on any threatened or endangered plant population in the FFO area.
PI	Threatened, Endangered or Candidate Species - Animals	11.1.2004	Larry Greenwood, Mark Pierce, Suzanne Grayson	This proposal would potentially impact TEC animal species and would be discussed further in the EA. Potential impacts: listed/candidate species and potential and historic habitat. The area contains a variety of habitats for a variety of small, upland, and big game species as well as threatened, endangered and sensitive species (TES). The wildlife biologist would be consulted for all planned actions. During fire suppression operations, a resource advisor from the field office would assure that appropriate actions can be taken to protect wildlife species and their associated habitats.
NI	Wastes (hazardous or solid)	11.1.2004	Jerry Mansfield, Stan Adams	This proposal would not impact hazardous or solid wastes if the following guidelines are followed. The use of hazardous materials for fire or fuels activities would comply with state and federal laws and regulations. Included in the Proposed Action are the following resource protection measures (RPMs): ▪ Recognize hazardous wastes and move fire personnel to a safe distance from dumped chemicals, unexploded ordnance, drug labs, wire burn sites, or any other hazardous wastes. ▪ Immediately notify BLM field office hazmat coordinator or state hazmat coordinator upon discovery, following the BLM hazardous materials contingency plan.
PI	Water Quality (drinking water/ groundwater)	11.1.2004	Phil Zieg	This proposal would potentially impact water quality and would be discussed further in the EA. Potential impacts: water quality due to unplanned actions. Short-term impacts include the potential for severe fires and ash would be an impact. As decision given in fire management plan (FMP), there would not likely be impacts. RPMs in the Proposed Action address would mitigate most of the potential impacts. Further, the total maximum daily load (TMDL) process is underway on the 303(d) listed Sevier River. No municipal watersheds 'officially' designated in the planning area. Designated watersheds are only applicable when surface water is used for culinary purposes. The only community in the six-county area that is involved with a municipal watershed is Monroe, which is in the process of developing Cold Spring for surface water supply. Culinary water sources on public land generally have right-of-way grant that includes source and pipeline. Drinking water source protection planning for wells and springs would be expected to have been completed by the various communities to comply with state regulation. All existing wells and springs were required to have

NP/ NI/ PI	Resource	Date Reviewed	Signature	**Review Comments** (required for all NIs and PIs. PIs require further analysis.)
				completed protection plans by December 31, 1999.
PI	Wetlands/ Riparian Zones	11.1.2004	Larry Greenwood, Bill Thompson	This proposal would potentially impact wetlands and riparian zones and would be discussed further in the EA. Potential impacts: heavy equipment during fire suppression activities or fire control lines and fire retardant may have an effect on riparian vegetation.
PI	Wild and Scenic Rivers	11.1.2004	Tim Finger	This proposal would potentially impact wild and scenic river eligibility and would be discussed further in the EA. Potential impacts: degradation of outstandingly remarkable values (ORVs) associated with river segments. There are no designated wild and scenic rivers in the RFO or FFO. Twelve river segments totaling 135 miles have been found in the RFO to be eligible for potential designation, but no suitability study has been completed. Management guidelines are set in the Wild and Scenic Rivers Act (PL 90-542) and BLM Manual 8351. Upon determining eligibility, and pending determination of suitability, protective management consists of a case-by-case of review of proposed action, with resulting action or mitigation that assures eligibility and tentative classification would not be affected. Any identified ORVs are to be protected.
PI	Wilderness and Wilderness Study Areas	11.1.2004	Tim Finger, Steve Bonar	This proposal would potentially impact wilderness values and would be discussed further in the EA. Potential impacts: heavy equipment during fire suppression activities or fire control lines and fire retardant may have an effect on wilderness values. There are no designated wilderness areas present. RFO manages 11 parcels of lands covering approximately 430,000 acres which are under study by Congress for possible designation as wilderness. FFO manages all or portions of seven wilderness study areas (WSAs). These lands are managed under the interim management policy (IMP) in BLM Handbook H-8550-Change 1. Management emphasis is always to manage the WSA lands so as not to impair the suitability of such areas for preservation as wilderness, with particular concern and attention for valid existing rights, permitted activities, grandfathered uses, and to prevent unnecessary or undue degradation.
OTHER RESOURCES CONCERNS*				
NI	Rangeland Health Standards and Guidelines	11.1.2004	Chris Colton, Harvey Gates, Burke Williams, Leroy L. Smalley 11/16/04	This proposal would not impact rangeland health standards and guidelines. Rangeland health standards and guidelines would be followed and are incorporated into the proposed actions (see RPMs for riparian, soils, T&E species, water quality, livestock and vegetation). Fire management decisions in the Proposed Action would not be contributing to any failure to meet rangeland health standards. Grazing guidelines for Utah allow for the use of non-native species for rangeland rehabilitation where native species are unlikely to establish or native seed is cost prohibitive or unavailable.
PI	Livestock Grazing	11.1.2004	Chris Colton, Harvey Gates, Burke Williams, Bob Bate, Leroy L. Smalley	This proposal would potentially impact livestock grazing and would be discussed further in the EA. Impacts on livestock grazing generally increase as fire size increases, although total elimination of fire also impacts long-term rangeland forage condition and amount of forage available. No fires over a long period on most of our range sites result in decadent sage stands and expanding pinyon/juniper stands with accompanying reduction in forage availability and degradation of the soil resource. Fires occurring in the areas where fuels have been accumulating for long periods usually result in larger and hotter burning, severe incidents that have greater short- and long-term impacts on

NP/ NI/ PI	Resource	Date Reviewed	Signature	**Review Comments** (required for all NIs and PIs. PIs require further analysis.)
			11/16/04	grazing. Natural or prescribed periodic fire encourages diversity of species present and a mosaic mix of plant age structure that helps provide different nutritional values and seasonal forage requirements for livestock and wildlife. Any fire on salt desert scrub sites results in pure stands of cheatgrass or other invasive species. Fire on an allotment reduces available forage in the short term. If rehabilitated, the forage available is generally greater in the long term. Any range improvements (fences, corrals, cabins, etc.) destroyed by fire impact the permittees and BLM in the short and long term both financially for the cost of replacement and their loss may restrict use of the allotments until replaced. Permittees are impacted for at least two growing seasons by the fire and accompanying rehabilitation and stabilization efforts by the loss of use of their allotments or portions thereof. Limiting fire size to that specified in each fire management unit should minimize impacts on livestock grazing.
PI	Woodland Forestry	11.1.2004	Doug Thurman, Brent Crosland	This proposal would potentially impact woodland and forestry resources and would be discussed further in the environmental assessment. Potential impacts: availability of forest-related products (including posts, firewood, Christmas trees, nuts, etc.) Benefits would be expected to the woodland and forest by implementing the treatments proposed in the fire plan. A program of mechanical, fire and other appropriate treatments would reduce the pinion juniper trees, which would reduce the potential fire hazard and enhance desirable understory plants that are important for watershed cover and wildlife habitat. The pinion juniper trees are currently overstocked over much of the woodland and are crowding out the desirable understory plants.
PI	Vegetation (including special status plant species)	11.1.2004	Dave Whitaker, Larry Greenwood, Leroy Smalley	This proposal would potentially affect vegetation including special status plant species and would be discussed further in the EA. Potential impacts: heavy equipment during fire suppression activities or fire control lines and fire retardant may have an effect on wilderness values. There are several plants designated as BLM sensitive species in the FFO and RFO areas. Fire suppression activities that may potentially impact these plant species should be coordinated with a resource advisor. The full fire suppression response to fires in non-fire adapted vegetation communities, such as salt desert scrub communities, should benefit some sensitive plant species (SPS) by restricting the spread and increasing density of invasive weeds, such as cheatgrass and knapweeds. Due to the large scale and complexity of National Environmental Policy Act (NEPA) analysis of the fire plan, it is impossible to analyze the site-specific impacts of future fuels reduction or restoration projects on SPS. Therefore, future fuels and restoration projects would need to be submitted for review and approval through the T&E species plant specialist on a case-by-case basis. As those project areas and proposed actions are spelled out, any relevant issues specific to plant species, the project area, or the particular action to be taken can be addressed at that time. If any sensitive species are discovered during fire-related activities that may be affected or disturbed, all activities that may affect this resource would cease and notification would be made to the T&E species plant specialist.
PI	Fish and Wildlife (including special status species)	11.1.2004	Mark Pierce, Larry Greenwood, Suzanne Grayson	This proposal would potentially impact fish and wildlife including special status species and would be discussed further in the EA. Potential impacts: loss/change of habitat; loss of individuals, changes in community type.

NP/ NI/ PI	Resource	Date Reviewed	Signature	**Review Comments** (required for all NIs and PIs. PIs require further analysis.)
PI	Soils	11.1.2004	Brant Hallows	This proposal would potentially impact soils and would be discussed further in the EA. Potential impacts: soil nutrient cycling, alter the physical structure of the soil, and change the rate of infiltration, runoff, erosion, and sedimentation.
NI	Recreation	11.1.2004	Steve Bonar, Doug Thurman, Sue Fivecoat	This proposal would not impact recreation. The Proposed Action includes a RPMs that prioritize suppression of protect/preserve recreation sites/facilities and thus, would address the concern of direct impacts from fire events. A RPM is also included to contact the resource advisor for the location of commercial groups in area. Other RPMs address any proliferation of tracks or new trails by off-highway vehicle use (OHV) after a fire action.
NI	Visual Resources	11.1.2004	Steve Bonar, Tim Finger	This proposal would not impact visual resources. Although wildfire would change the visual characteristics from what are currently present, it is a natural process. Visual resources could be impacted by some suppression activities. The Proposed Action includes RPMs that addresse any proliferation of tracks or new trails by OHV use after a fire action. Visual resources would recover over the long term and could be enhanced through rehabilitation efforts. Prescribed fire and non-fire treatments should be planned in accordance with visual resource management class objectives.
NI	Geology	11.1.2004	Michael Jackson, Jerry Mansfield	This proposal would not impact geology The Proposed Action includes an RPM that would protect geological resources.
NI	Mineral Resources	11.1.2004	Michael Jackson	This proposal would not impact mineral resources. The Proposed Action includes an RPM that addresses both protection of mineral facilities and notification of operators of presence or threat from wildfire during event.
NI	Paleontology	11.1.2004	Sheri Wysong	This proposal would not impact paleontology. Planned projects should be consistent with BLM Manual and Handbook H-8270-1, Chapter III and III to avoid areas where significant fossils are known or predicted to occur or to provide for other mitigation of possible adverse effects. In the event that paleontological resources are discovered in the course of surface-disturbing fire management activities, including fires suppression, activities efforts should be made to protect these resources.
NI	Lands Access	11.1.2004	Nancy DeMille, Clara Stevens	This proposal would not impact lands and access. Concerns relating to lands and access during planned activities have been considered with the inclusion of the following RPMs in the Proposed Action: "Fire management practices shall be designed to avoid or otherwise ensure protection of authorized right-of-ways and other facilities located on the public lands, including coordination with holders of major right-of-way systems within right-of-way corridors." Prior to planned activities, appropriate coordination would take place with holders of rights-of-way as well as with private and cooperating agency land owners, and specific RPMs would be incorporated into proposed actions as needed.
PI	Fire and Fuels Management	11.1.2004	Rick Higginbotham, Linda Chappell	Fire and fuels management considerations form the basis for the Proposed Action. Therefore, fire and fuels management impacts are considered and addressed in full in this EA. The objective of the FMP is to provide management direction for this resource, in consideration of other resources.
PI	Socio-	11.1.2004	Warren	This proposal would potentially impact social and economics of the area and would be

NP/ NI/ PI	Resource	Date Reviewed	Signature	**Review Comments** (required for all NIs and PIs. PIs require further analysis.)
	economics		Sorenson	discussed further in the EA. As the desired wildland fire condition (DWFC) is achieved, more natural fire regimes would be established (50- to100-year timeframe). Over time there may be fewer economic losses to the six county areas due to large, unplanned severe fires. The economic impact to allotment lessees would occur due to planned actions. Short-term impacts would be immediate loss of forage availability. Long-term impacts, generally two years out from a fire or treatment procedure, would be positive, resulting in an increase in the quantity and qualify of forage for livestock. Short-term impact to forest resources could potentially reduce forest harvest and the associated economic impact. Long-term impact to forest resources would be an increase in health and sustainability of resources. Reducing the risk of severe wildfire would reduce the likelihood of impacts on forestry resources, tourism, and grazing resources. During prescribed fires, direct impacts on communities are immediate but short in duration. Community health could be placed at risk if burn treatments are long in duration or if many occur within a short period of time in a local area. These potential impacts are mitigated, if not eliminated, at the project level. Air quality is addressed specifically in the prescribed fire burn plan. Numbers of fires permitted in any given area at any given time are managed by the State of Utah Department of Environmental Quality, Division of Air Quality, through the statewide burn permit process.
NI	Wild Horses and Burros	11.1.2004	Dona Rees, Eric Reid	This proposal would not impact wild horses and burros. RPMs in the Proposed Action address the concern of post-fire activities restricting wild horse access to water.
PI	Wilderness Characteristics	11.1.2004	Tim Finger, Steve Bonar	This proposal would potentially impact lands with wilderness characteristics and would be discussed further in the EA. RFO and FFO manage lands (21 separate parcels in RFO and 10 separate parcels in FFO) that have been inventoried by BLM and found to possess wilderness characteristics (as defined by Section 2.c of the Wilderness Act and FLPMA). These lands are termed "lands that have wilderness characteristics." RFO has also received and evaluated (but not inventoried) numerous submittals in the course of scoping for the new RMP on lands that may have wilderness characteristics, as defined by BLM IM 2003-275 – Change 1. The lands that have been evaluated and found to possess wilderness characteristics are defined as "lands likely to have wilderness characteristics". All these lands are managed under the terms of the existing land use plan, and the individual wilderness resources are addressed by resource. Impacts depend on particular resources within that land parcel deemed critical (e.g., opportunity for primitive recreation, natural condition of the landscape, etc).

FINAL REVIEW

Reviewer Title	Date	Signature	Comments
NEPA Environmental Coordinator, Richfield	12/08/2004	/S/ Rod Lee	
NEPA Environmental Coordinator, Fillmore	12/08/2004	/S/ Mark Pierce	
Richfield Field Manager	12/08/2004	/S/ Cornell Christensen	
Fillmore Field Manager	12/08/2004	/S/ Sherry Hirst	

Appendix B
Wildland Fire Management Legislation

Wildland Fire Management Legislation

Wildland Fire Management Policy	
Authority: The statutes cited herein authorize and provide the means for managing wildland fires.	
Protection Act of September 20, 1922 (42 Stat. 857; 16 USC 594)	Authorizes the Secretary of Interior to protect (and preserve, from fire, disease, or the ravages of beetles or other insects), timber owned by the United States upon the public lands, national parks, national monuments, Indian reservations, or other lands under the jurisdiction of the Department of Interior (USDI) owned by the United States.
Clark-McNary Act of 1928 (45 Stat. 221; 16 USC 487)	Authorizes technical and financial assistance to the states for forest fire control and for production and distribution of forest tree seedlings. (Sections One through Four were repealed by the Cooperative Forestry Assistance Act of 1978.)
Federal Property and Administrative Service Act of 1949 (40 USC 471 et seq.)	Provides the government an economical and efficient system for procurement and supply of personal property and non-personal services.
Reciprocal Fire Protection Act, Act of May 27, 1955 (69 Stat. 66; 42 USC 1856a, 42 USC 1856)	Authorizes agencies that provide fire protection for any property of the United States to enter into reciprocal agreements with other fire organizations to provide mutual aid for fire protection.
Clean Air Act, Act of July 14, 1955, as amended (42 USC 7401 et seq.)	Provides for protection and enhancement of the nation's air resources and applies to application and management of prescribed fire.
Wilderness Act, Act of September 3, 1964 (16 USC 1131, 1132)	Provides for designation and preservation of wilderness.
National Wildlife Refuge System Administration Act of 1966, as amended (80 Stat. 927; 16 USC 668dd through 668ee)	Provides guidelines and directives for administration and management of all areas in the National Wildlife Refuge System, including "wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas."
National Environmental Policy Act of 1969 (42 USC 4321)	Requires preparation of environmental impact statements (EISs) for federal projects that may have a significant effect on the environment. It requires systematic, interdisciplinary planning to ensure the integrated use of the natural and social sciences and the environmental design arts in making decisions about major federal actions that may have a significant effect on the environment.
Endangered Species Act of 1973 (16 USC 1531)	Provides for protection and conservation of threatened and endangered (T&E) fish, wildlife, and plant species. Directs all federal agencies to utilize their authorities and programs to further the purpose of the ESA.
Disaster Relief Act, Act of May 22, 1974 (88 Stat. 143; 42 USC 5121)	Provides the authority for the federal government to respond to disasters and emergencies. Established the presidential declaration process and authorized disaster assistance programs.
Federal Fire Prevention and Control Act, Act of October 29, 1974 (88 Stat. 1535; 15 USC 2201)	Authorizes reimbursement to state and local fire services for costs incurred in firefighting on federal property.

Wildland Fire Management Policy	
Federal Land Policy and Management Act of 1976 (90 Stat. 2743)	Outlines functions of the BLM Directorate, provides for administration of public land through the BLM, provides for management of public lands on a multiple use basis, and requires land use planning, including public involvement and continuing inventory of resources. The Act establishes as public policy that, in general, the public lands would remain in federal ownership. It also authorizes: ▪ Acquisition of land or interests in lands consistent with the mission of the Department and land use plans (LUPs). ▪ Permanent appropriation of road use fees collected from commercial road users to be used for road maintenance. Collection of service charges, damages, and contributions and use of funds for specified purposes. ▪ Protection of resource values. ▪ Preservation of certain lands in their natural condition. ▪ Compliance with pollution control laws. ▪ Delineation of boundaries in which the federal government has right, title, or interest. ▪ Review of land classifications in land use planning and modification or termination of land classifications when consistent with LUPs. ▪ Sale of lands if the sale meets certain disposal criteria. ▪ Issuance, modification, or revocation of withdrawals. ▪ Exchange or conveyance of public lands if in the public interest. ▪ Outdoor recreation and human occupancy use. ▪ Management of the use, occupancy, and development of public lands through leases and permits. ▪ Designation of federal personnel to carry out law enforcement responsibilities. ▪ Determination of the suitability of public lands for rights-of-way purposes (other than oil and gas pipelines) and specification of the boundaries of each right-of-way. ▪ Recordation of mining claims and reception of evidence of annual assessment work.
Federal Grant and Cooperative Agreement Act of 1977 (PL 950224, as amended by PL 97-258, September 13, 1982, 96 Stat. 1003; 31 USC 6301 thru 6308)	Establishes criteria for a federal agency to use to determine whether a transaction is procurement or financial assistance. Establishes guidelines to bring about uniformity in the selection and use of procurement contracts, grants, and cooperative agreements.
Supplemental Appropriation Act, Act of September 10, 1982 (96 Stat. 837)	Authorizes Secretary of Interior and Secretary of Agriculture to enter into contracts with state and local governmental entities, including local fire districts, for procurement of services in the preparedness, detection, and suppression of fires on any units within their jurisdiction.

Wildland Fire Management Policy	
Wildfire Suppression Assistance Act, Act of April 7, 1989 (PL 100-428, as amended by PL 101-11, April 7, 1989; 42 USC 1856).	Authorizes the Secretary of Agriculture to enter into agreements with fire organizations of foreign countries for assistance in wildfire protection.
Indian Self-Determination and Education Assistance Act (PL 93-638), as amended	Provides for the full participation of Indian tribes in programs and services conducted by the federal government for Indians and encouraged the development of human resources of the Indian people; establishes a program of assistance to upgrade Indian education.
National Indian Forest Resources Management Act (PL 101-630, November 28, 1990)	Requires the Secretary of Interior to undertake management activities on Indian forestlands, in furtherance of the United States trust responsibility for these lands. Activities must incorporate the principles of sustained yield and multiple use, and include tribal participation.
Tribal Self-Governance Act of 1994 (PL 103-413)	Provides for native tribes to enter into annual funding agreements with USDI "to plan, conduct, consolidate, and administer programs, services, functions, and activities" administered by the USDI that are of special geographic, historical, or cultural significance.
Clean Water Act of 1987, as amended (33 USC 1251)	Establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation's water.
Executive Order 12898, Environmental Justice, February 11, 1994 (59 FR 7629)	Requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.
Executive Order 13112, Invasive Species, February 3, 1999 (64 FR 6183)	Directs federal agencies to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause.
Migratory Bird Conservation Act of 1929, as amended (16 USC 715) and treaties pertaining thereto	Provides for habitat protection and enhancement of protected migratory birds.
Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, January 10, 2001 (66 FR 3853)	Directs agencies within the executive branch to take certain actions to further implement the Migratory Bird Treaty Act, with the goal of promoting the conservation of migratory bird populations.
Wild and Scenic Rivers Act (PL 90-542)	Provides a national policy and program to preserve and protect selected rivers because of their outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.
Archaeological Resource Protection Act	Expands the protections provided by the Antiquities Act of 1906 in protecting archaeological resources and sites located on public and Indian lands.
Executive Order 11514, Protection and Enhancement of Environmental Quality	Directs federal agencies to provide leadership in protecting and enhancing the quality of the nation's environment to sustain and enrich human life and to initiate measures to meet national environmental goals.

Wildland Fire Management Policy	
Executive Order 11593, Protection and Enhancement of the Cultural Environment	Requires federal agencies to provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the nation by administering and initiating measures necessary to preserve, restore, and maintain federally owned sites, structures, and objects of historical, architectural, or archaeological significance.
Executive Order 11988, Floodplain Management	Requires federal agencies to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains.
Executive Order 11990, Protection of Wetlands	Directs federal agencies to provide leadership and to take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.
Executive Order 12866, Regulatory Planning and Review	Enhances planning and coordination with respect to both new and existing regulations; reaffirms the primacy of federal agencies in the regulatory decision-making process; restores the integrity and legitimacy of regulatory review and oversight; and makes the process more accessible and open to the public.
Colorado River Basin Salinity Control Act	Authorizes the construction, operation, and maintenance of works in the Colorado River Basin to control the salinity levels of the Colorado River.
National Historic Preservation Act of 1966, as amended (16 USC 470)	Expands protection of historic and archaeological properties to include those of national, state, and local significance. It also directs federal agencies to consider the effects of Proposed Actions on properties eligible for, or included in, the National Register of Historic Places.
Healthy Forest Restoration Act of 2003	Reduces the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes.
Wild and Scenic Rivers Act of 1968 (PL 90-542, as amended) (16 USC 1271-1287)	Provides for a National Wild and Scenic Rivers Systems and for other purposes.
These acts are codified (as referenced) in the United States Code, which can be accessed at http://www4.law.cornell.edu/uscode.	
Policy Documents	
Federal Wildland Fire Management Policy and Program Review, December 18, 1995, USDI and USDA Final Report. Federal Wildland Fire Management Policy and Program Review, March 23, 1996, USDI and USDA Implementation Action Plan Review and Update of the 1995 Federal Wildland Fire Management Policy, January, 2001, USDI, USDA, DoE, DoD, DoC, EPA, FEMA, and NASF.	Provide a common approach to wildland fire by USDI and U.S. Department of Agriculture (USDA). The plan encourages agencies to move the emphasis from fire suppression to integrating fire into the management of lands and resources consistent with public health and environmental quality considerations. Managers are encouraged to use fire as one of the basic tools for accomplishing resource management objectives
Utah BLM Rangeland Health Standards and Guidelines, 1997.	Provides standards that spell out conditions to be achieved on BLM lands in Utah and guidelines that would be applied to achieve the standards.

Wildland Fire Management Policy	
Western Governor's Association (http://www.westgov.org/)	
A Collaborative Approach for Reducing Wildland Fire risks to Communities and the Environment: 10-Year Comprehensive Strategy, August 2001.	Outlines a comprehensive approach to the management of wildland fire, hazardous fuels, and ecosystem restoration and rehabilitation on federal and adjacent state, tribal, and private forest and rangelands in the United States, emphasizing measures to reduce the risk to communities and the environment
A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan, May 2002, 27p.	Sets forth core principles was developed to guide the identification of goals for this strategy. These principles include such concepts as priority setting, accountability, and an open, collaborative process among multiple levels of government and a range of interests. The end results sought by all stakeholders are healthier watersheds, enhanced community protection, and diminished risk and consequences of severe wildland fires. This community-based approach to wildland fire issues combines cost-effective fire preparedness and suppression to protect communities and the environment with a proactive approach that recognizes fire as part of a healthy, sustainable ecosystem.
National Academy of Public Administration (http://www.napawash.org/)	
Federal Fire Management: Limited Progress in Restarting the Prescribed Fire Program (GAO/RCED-91-42), December 5, 1990.	Reiterates that fire is beneficial and even necessary to wildlands. Where fire has been a historic component of the environment it is essential to continue that influence, and that attempts to exclude fire from such lands could result in unnatural ecological changes and increased risks created by accumulation of fuels on the forest floor. Supports the use of prescribed burn to achieve management objectives, when the risks of such a burn have been analyzed.
State of Utah Regulations and Local Government Plans	
Utah Administrative Code R317	Sets forth Utah regulation concerning water quality.
Utah Administrative Code R307	Sets forth Utah's regulation concerning air quality.
Six County Association of Government	Sets forth Pre-Disaster Mitigation Plan for Utah's Juab, Millard, Piute, Sampete, Sevier, and Wayne Counties.

Appendix C
Wildland Fire Management Categories

Wildland Fire Management Categories

For the purposes of comparing the No Action Alternative with the Proposed Action in this environmental assessment (EA), the planning areas for both alternatives were divided into four fire management categories that define the role and response that wildland fire has in a particular ecosystem. These four fire management categories were labeled A, B, C, and D, and are defined below.

Category A: Where wildland fire is not desired.

Wildland fires in these areas have adverse environmental impacts on the ecosystem. These impacts include such factors as the destruction of crucial wildlife habitat, conversion of native vegetation to exotic plant species, establishment of weed species, increased soil loss, reduced water quality, and damage to cultural and historical resources.

Category A areas are where fire is not a regular, natural part of the ecosystem, or where fire has more harmful impacts than benefits to the ecosystem. Fire has generally played a negative role in these areas by altering the native vegetation and allowing introduction of exotic species such as cheatgrass. Introduction of these exotic species has changed the size and interval of fires and has altered the natural species composition of the sites disrupting the natural secession of the native plant communities. As a result, increased size and frequency of fires allows continued and increased disturbance to native plant communities, damages wildlife habitat, and produces other adverse impacts on the ecosystem. Because the native species generally lack an ability to out-compete introduced and exotic species following a fire, rehabilitation projects are required to establish desirable vegetation and prevent soil loss and other undesirable natural consequences. Key examples include the salt desert shrub, black sagebrush, and big sagebrush shrub communities.

Prescribed fire for resource management is not recommended nor desired in these units due to fire's adverse environmental impacts. However, prescribed fire may be used to establish fuelbreaks and perform hazardous fuel reduction when the benefits of mitigating the potential for a large spreading fire outweigh the impacts of the fuels management project. In addition, other forms of fuels management designed to protect these fire-sensitive areas are recommended and may include mechanical manipulation, grazing management, seeding to less flammable and more desirable species, vegetative fuelbreaks, and other management actions.

Category B: Where unplanned wildland fire would likely cause negative effects, but these effects may be mitigated through fuels management, prescribed fire, or other strategies.

Unplanned wildland fires in category B produce similar adverse and harmful impacts as in category A. This adverse response to wildland fires is due to a combination of fire sensitivity and abnormal wildland fuels accumulations that produce larger, more severe fires than would normally occur in a healthy ecosystem. Due to this, the primary objective is to limit and suppress wildland fires within these areas. However, category B areas may respond positively to properly managed and planned prescribed fires. Unlike Category A areas, prescribed fire may be used to reintroduce fire into the ecosystem and meet resource management objectives. Small, limited fires can improve vegetation diversity and/or revitalize old decadent plant communities. In addition, prescribed fire is used to reduce hazardous fuel loadings, thus mitigating and reducing the impacts should a wildland fire occur. The key examples are those areas where the absence of fires has resulted in replacement of diverse vegetation communities with monotypic stands of less desirable structure and/or species. These areas include dense stands of juniper or decadent stands of big sagebrush. These plant communities may have little vegetation and age class diversity, resulting in accumulations of hazardous and volatile fuels.

Fuels management is a key to mitigating the negative impacts of unplanned wildland fire in these areas. Fuels management options may include prescribed fire, mechanical manipulation, seeding of less flammable and more desirable species, vegetation greenstripping, and other management strategies.

Category C: Where wildland fire is desired to manage ecosystems, but there are constraints because of the existing vegetation due to past fire exclusion.

These are areas where wildland fire is a natural part of the ecosystem. The health and diversity of the vegetation, soils, and wildlife have evolved and are enhanced or dependent upon the natural consequences of fire. In normal circumstances, the existing native vegetation would naturally re-vegetate after fire. Key ecosystem examples include juniper with perennial grasslands, aspen groves and big sagebrush with perennial grasses, and other upper elevation plant communities. Although these ecosystems benefit from both unplanned wildland fires and planned prescribed fires, use of either as a management tool may be limited by constraints. These constraints include threats to adjacent developments and residential communities, smoke impacts, lack of manageable fire boundaries, political concerns, and economics of management. Because unplanned wildland fires or wildland fires can be beneficial in these areas, the appropriate fire management response may utilize less aggressive suppression strategies and tactics that result in more acreage burned than under a more aggressive wildfire suppression response.

Prescribed fire in these areas is recommended both to meet resource management objectives and as fuels management to mitigate the constraints that may limit using less aggressive suppression in wildland fire situations. Fuels management may be necessary to define more manageable wildland fire boundaries, to protect and minimize the severity and impact of wildland fires on existing plant communities, and to protect values in adjacent units (i.e.: resource values, developments, etc.). Fuels management activities may involve prescribe fire, mechanical manipulation, fuelbreak development, and other management strategies.

Category D: Areas where wildland fires may burn without constraints associated with resource conditions, social, economic, or political considerations.

The ecosystem response of these areas is similar to category C, except there are few constraints in letting the fire play out its natural role; once the decision to use wildland fire for benefits has been made, a wildland fire implementation plan is developed by an interdisciplinary group to continue to manage the fire appropriately. Most often, the appropriate fire management response in these areas is to monitor the fire and let the fire play out its natural role in the ecosystem. The key ecosystem example for this category would be mixed conifer/aspen, some spruce/fir, and ecosystems in condition class one. Vegetation in these areas is sparse and there is little to no threat to resource values, improvements, or adjacent ownerships. In addition, because of their isolation, social, economic, or political considerations are unlikely to occur.

Appendix D
Goals and Objectives by Fire Management Unit for the Proposed Action

Goals and Objectives by Fire Management Unit for the Proposed Action

Richfield Fire Management Unit (FMU)	Total FMU acres	Total BLM acres in FMU	Wildland Fire Suppression[1] FIL 1-3/ FIL 4-6	Acres Available for Wildland Fire Use	Annual Prescribed Fire	Annual Non-fire Fuel Treatments	Other Goals and Objectives
A1-West Desert Lowlands	2,680,286	1,942,099	0 SDS 500/1,500	0	6,000 CG	6,000	Full wildfire suppression would be implemented in the non-fire adapted vegetation communities of salt desert shrub.
B1-Little Sahara Recreation Area	62,796	57,580	1,500/2,500	0	1,000	2,000	
B2-Canyon Range	119,774	0	1,500/2,500	0			Protect recreational areas.
B3-Drums	216,773	190,947	1,500/2,500	0	2,000	2,000	
B4-Confusions	723,335	650,742	0 SDS 1,500/2,500	0	2,000	2,000	▪ Protect old growth vegetation including bristlecone pine stands. ▪ Full wildfire suppression would be implemented in the non-fire adapted vegetation communities of salt desert shrub.
B5-Beaver Canyon	50,907	0	1,500/2,500	0	2,000	2,000	▪ Protect recreational areas. ▪ Protect the Bullion Canyon interpretive site. ▪ Use fire to enhance riparian vegetation where appropriate.
B6-Accord Lakes	67,318	180	1,500/2,500	0	2,000	6,000	Protect recreational areas.
B7-Fishlake Basin	20,621	260	1,500/2,500	0			Protect recreational areas.
B8-Fremont	72,256	36,539	1,500/2,500	0	2,000	2,000	Protect the Black Ridge communications site and Hanksville powerline.
C1-Twin Peaks	212,936	151,663	2,000/3,000	4,421	4,000	4,000	
C2-Crickets	318,179	267,608	2,000/3,000	6,862	2,000	2,000	
C3-Keg	83,030	76,603	2,000/3,000	3,476	2,000	2,000	
C4-Eureka	559,860	284,987	2,000/3,000	20,253	5,000	5,000	▪ Widespread use of prescribed fire activity would be used to attain desired resource and ecological conditions. ▪ Fire and non-fire fuel treatments would be utilized to reduce the hazardous effects of unplanned wildfire.
C5-Valley Mountains	175,019	117,752	2,000/3,000	9,803	2,000	2,000	
C6-Sanpete Valley	310,606	80,803	3,000/4,000	9,138	4,000	4,000	Protect the Levan communication site, a private radio communication site, and private cabins.
C7-North Monroe	149,269	32,457	3,000/4,000	8,854	2,000	2,000	▪ Protect Monrovian Park Campground, Koosharem guard station, Signal Peak communication site and summer homes.

Richfield Fire Management Unit (FMU)	Total FMU acres	Total BLM acres in FMU	Wildland Fire Suppression[1] FIL 1-3/ FIL 4-6	Acres Available for Wildland Fire Use	Annual Prescribed Fire	Annual Non-fire Fuel Treatments	Other Goals and Objectives
							▪ Encourage implementation of defensible space around all high value resources. ▪ Suppress all fires that threaten high value timber resources. ▪ Suppress fires that threaten the municipal watershed. ▪ Protect unstable soils.
C8-Parker	268,348	133,083	3,000/4,000	41,598	4,000	4,000	Suppress all wildfires in black sage stands.
C9-Antimony	48,954	38,919	2,000/3,000	7,790	4,000	4,000	
C10-Hanksville Desert	1,289,668	1,133,985	3,000/4,000	9,766	2,000	2,000	Protect biotic soil crusts.
D1-Deep Creeks	116,792	106,232	4,000/5,000	17,328	6,000	6,000	Protect old growth vegetation including bristlecone pine stands.
D2-Swasey/ Fish Springs	321,632	312,636	4,000/5,000	25,617	2,000	2,000	Protect old growth vegetation including bristlecone pine stands.
D3-Crystal Peak	438,939	340,431	4,000/5,000	15,964	4,000	4,000	
D4-Pahvant	520,249	26,060	4,000/5,000	2,972	500	1,500	▪ Encourage implementation of defensible space around all high value resources. ▪ Protect recreational areas. ▪ Protect communication sites and high voltage powerlines. ▪ Suppress fires that threaten municipal watersheds.
D5-Tushar Mountains	299,288	20,988	4,000/5,000	3,781	1,500	1,500	▪ Protect the Kimberly Historic Mining Area. ▪ Protect the Bullion Canyon interpretive site. ▪ Protect Fremont Indian State Park, Big Rock Candy Mountain Resort, Big Flat guard station, public campgrounds and private canyons. ▪ Protect the Deer Trail Mine. ▪ Protect the Sulphurdale geothermal wells. ▪ Protect the numerous communication sites.
D6-Langdon	283,914	123,012	4,000/5,000	25,933	6,000	6,000	▪ Protect Otter Creek State Park, Piute State Park, and Dry Creek guard station. ▪ Encourage implementation of defensible space around all high value resources.
D7-Lost Creek	176,919	30,357	4,000/5,000	10,861	2,000	2,000	▪ Suppress all fires in timber management area 7A located near Hancock Flat (high risk timber stand management area. ▪ Protect Gooseberry recreational area; Protect Mt. Terrill and Gooseberry guard stations.
D8-Willow Creek	93,488	22,418	4,000/5,000	1,076	2,000	2,000	

Richfield Fire Management Unit (FMU)	Total FMU acres	Total BLM acres in FMU	Wildland Fire Suppression[1] FIL 1-3/ FIL 4-6	Acres Available for Wildland Fire Use	Annual Prescribed Fire	Annual Non-fire Fuel Treatments	Other Goals and Objectives
D9-Thousand Lake/ Last Chance	481,452	111,338	4,000/5,000	10,867	6,000	6,000	▪ Suppress all fires in timber management area (high risk timber stand management area). ▪ Protect primary culinary watersheds for Fremont, Lyman, Torrey, and other local communities. ▪ Protect the Mount Terrill communications site. ▪ Protect Sunglow and Elkhorn Campgrounds and Elkhorn guard station.
D10-Henry Mountains	321,319	283,241	4,000/5,000	64,608	10,000	3,000	▪ Protect communications sites on South Creek Ridge, Copper Ridge, South Summit Ridge, and Bulldog Ridge. ▪ Protect state lands with cabins at Willow Springs (UDWR), Mud Spring (near Crescent Creek), Gibbons Spring, and Gold Creek development. ▪ Protect Lonesome Beaver, Dandelion Flat, McMillan Springs, Star Springs recreation areas. ▪ Protect BLM cabins at Hancock Spring.
TOTAL	10,483,927	6,572,920		300,968	88,000	87,000	

[1] Contain fire per ignition at this acreage or less

Abbreviations: CG-Cheatgrass, FS-Forest Service Land, SDS-Salt Desert Shrub

Appendix E
Resource Protection Measures Under the Proposed Action

Resource Protection Measures under the Proposed Action

Protection of human life is the most important goal for all resource protection measures (RPMs).

Abbreviations for fire management actions: SUP: Wildfire suppression; NF: Non-fire fuels treatment; WFU: Wildland fire use for resource benefit; ESR: Emergency Stabilization and Rehabilitation; RX: Prescribed Fire

Code	Protection Measures (and applicable fire management practices)	FMUs
Air Quality		
AQ-1	Evaluate weather conditions, including wind speed and atmospheric stability, to predict impacts from smoke from prescribed fires and wildland fire use. Coordinate with Utah Department of Environmental Quality for prescribed fires and wildland fire use. (RX, WFU)	All
AQ-2	When using chemical fuels reduction methods, follow all label requirements for herbicide application. (NF)	All
AQ-3	Restricted air space: Get clearance through RIFC prior to flights in these areas. (SUP, WFU, RX, NF, ESR)	D-1, D-2
Cultural Resources		
CR-1	Cultural resource advisors should be contacted when fires occur in areas containing sensitive cultural resources. (SUP)	All
CR-2	Wildland fire use is discouraged in areas containing sensitive cultural resources. A Programmatic Agreement is being prepared between the Utah State Historic Preservation Office, BLM, and the Advisory Council to cover the finding of adverse effect on cultural resources associated with wildland fire use. (WFU)	All
CR-3	Potential impacts of proposed treatment should be evaluated for compliance with the National Historic Preservation Act (NHPA) and the Utah Statewide Protocol. This should be conducted prior to the proposed treatment. (RX, NF, ESR)	All
CR-4	The resource advisor would consult with the agency archaeologist prior to construction of dozer/major hand lines and use of fire retardant. (SUP, WFU, RX)	All
CR-5	Apply fuels reduction where applicable around vulnerable prehistoric and historic resources to reduce damage from wildland fire. (RX, NF)	C-6
Invasive, Non-native Species		
INV-1	Wash any equipment used in areas where noxious weeds occur to minimize spread of noxious weeds. (SUP, WFU, RX, NF, ESR)	All
INV-2	In areas known to have weed infestations, aggressive action should be taken in rehabilitating firelines, seeding and follow-up monitoring, and treatment to reduce the spread of noxious weeds. Monitor burned areas and treat as necessary. All seed used would be tested for purity and for noxious weeds. Seed with noxious weeds would be rejected (ROD 13 Western States Vegetation Treatment EIS 1991). (SUP, WFU, RX, NF, ESR)	All
INV-3	Use certified weed-free seed on suppression rehabilitation. (SUP)	All
INV-4	Use of water in the Fishlake Basin could spread Whirling disease and other aquatic invasive species. Contact a resource advisor before water from any streams or waterbodies is used. (SUP, WFU, RX)	B-7, B-8
Native American Religious Concerns		
NAT-1	Consultation would be completed on an individual site-specific basis. (SUP, WFU, RX, NF, ESR)	All

Code	Protection Measures (and applicable fire management practices)	FMUs
Threatened, Endangered or Candidate Species - Plants and Animals		
END-1	Initiate Emergency Section 7 consultation with United States Fish and Wildlife Service (USFWS) upon the determination that wildfire suppression may pose a potential threat to any listed threatened or endangered species or adverse modification of designated critical habitat. (SUP)	All
END-2	Prior to planned fire management actions, survey for listed threatened and endangered (T&E) and non-listed sensitive species. Initiate Section 7 consultation with USFWS as necessary if proposed project may affect any listed species. Review appropriate management, conservation, and recovery plans and include recovery plan direction into project proposals. For non-listed special status plant and animal species, follow the direction contained in the BLM 6840 Manual. Ensure that any proposed project conserves non-listed sensitive species and their habitats and ensure that any action authorized, funded, or carried out by BLM does not contribute to the need for any species to become listed. (RX, NF, ESR)	All
END-3	See site-specific conservation measures identified in the Biological Assessment. (SUP, WFU, RX, NF, ESR)	All
END-4	A resource advisor must coordinate with the plant specialist in the Fillmore field office in order to authorize any dozer use. (SUP, WFU)	B-1
END-5	Contact the resource advisor for all fire management activities that may affect the Utah Prairie Dogs. (SUP, WFU, RX, NF, ESR)	B-7
END-6	Contact the resource advisor for all fire management activities that may affect the Southwest Willow Flycatcher. Manage fires according to the conservation plan. (SUP, WFU, RX, NF, ESR)	B-7, C-10
END-7	Protect Mexican Spotted Owl habitat. Manage fires according to the Mexican spotted owl recovery plan and "Suggestions for the Management of Mexican Spotted Owls." Contact resource advisor for all fire management activities. (SUP, WFU, RX, NF, ESR)	B-8, C-10
END-8	Suppress all wildland fires in critical sage grouse, prairie dog, or pygmy rabbit habitat. (SUP)	C-8
END-9	Contact the resource advisor for fire management activities in Bonneville cutthroat trout or Boreal toad habitat. (SUP, WFU, RX, NF, ESR)	D-6
Wastes (Hazardous or Solid)		
HW-1	Recognize hazardous wastes and move fire personnel to a safe distance from dumped chemicals, unexploded ordnance, drug labs, wire burn sites, or any other hazardous wastes. Immediately notify BLM Field Office hazmat coordinator or state hazmat coordinator upon discovery of any hazardous materials, following the BLM hazardous materials contingency plan. (SUP, WFU, RX, NF, ESR)	All
Wetlands/Riparian Zones		
WET-1	Plan and implement projects taking into account the potential impacts on water quality, including increased water yields that can threaten: fisheries and aquatic habitat; improvements at channel crossings; channel stability; and downstream values. Of special concern are: small headwaters of moderate to steep watersheds; erosive soils; multiple channel crossings; at-risk fisheries; and downstream residents. (RX, NF, ESR)	All
WET-2	When using chemical fuel reduction treatments follow all label directions, additional mitigations identified in project NEPA evaluation and the Approved Pesticide Use Proposal. At a minimum, provide a 100-foot-wide riparian buffer strip for aerial application, 25 feet for vehicle application and 10 feet for hand application. Any deviations must be in accordance with the label. Herbicides would be applied to individual plants within 10 feet of water where application is critical (BLM ROD 13 Western States Vegetation Treatment EIS 1991). (NF)	All

Code	Protection Measures (and applicable fire management practices)	FMUs
WET-3	Avoid disturbance of and the dropping of retardant in wetlands, springs, streams, or any areas containing riparian vegetation. (SUP)	A-1, C-4, D-1, D-4
WET-4	Avoid using retardant in the Pruess Lake riparian area unless life and property is in immediate danger. (SUP)	D-3
WET-5	Plan and implement projects consistent with compliance strategies for restoring or maintaining the restoration of water quality impaired [303(d) listed] waterbodies. Planned activities should take into account the potential impacts on water quality, including increased water yields that can threaten fisheries and aquatic habitat; improvements at channel crossings; channel stability; and downstream values. Of special concern are small headwaters of moderate to steep watersheds; erosive or saline soils; multiple channel crossings; at-risk fisheries; and downstream residents. (RX, NF, ESR)	All
WET-6	Suppress wildfires consistent with compliance strategies for restoring or maintaining the restoration of water quality impaired [303(d) listed] waterbodies. Do not use retardant within 300 feet of water bodies. (SUP, WFU)	All
WET-7	Avoid heavy equipment in riparian or wetland areas. During wildfire suppression or wildland fire use, consult a resource advisor before using heavy equipment in riparian or wetland areas. (SUP, WFU, RX, NF, ESR)	All
WET-8	Limit ignition within native riparian or wetland. Allow low-intensity fire to burn into riparian areas. (RX)	All
Wild and Scenic Rivers -- Not Indicated		
Wilderness, Wilderness Study Areas (H-8550-1, H-1742-1, Manual Section 1742)		
Wild-1	The use of earth-moving equipment must be authorized by the field office manager. (SUP, WFU, RX, ESR)	All
Wild-2	Fire management actions would rely on the most effective methods of suppression that are least damaging to wilderness values, other resources and the environment, while requiring the least expenditure of public funds. (SUP, WFU)	All
Wild-3	A resource advisor should be consulted when fire occurs in Wilderness and WSA. (SUP, WFU)	All
Wild-4	All methods and tools used for suppression within the Wilderness Study Areas would be consistent with Interim Management Policy and Guidelines (BLM Manual H-8550-1). (SUP)	All
Rangeland Health Standards and Guidelines		
R-1	Suppress all wildfires in black sage stands. (SUP)	C-5, C-8
Livestock Grazing (43 CFR 4160.1, and 43 CFR 4190, Utah Standards and Guidelines for Healthy Rangelands 1997)		
L-1	Notify permittees of requirements for non-use or rest of treated areas. Coordinate with permittees regarding the requirements for non-use or rest of treated areas. (SUP, WFU, RX, NF, ESR)	All
L-2	Rangelands that have been burned, by wildfire, prescribed fire, or wildland fire use, would be ungrazed for a minimum of one complete growing season following the burn. (SUP, WFU, RX)	All
L-3	Rangelands that have been re-seeded or otherwise treated to alter vegetative composition, chemically or mechanically, would be ungrazed for a minimum of two complete growing seasons. (RX, NF, ESR)	All

Code	Protection Measures (and applicable fire management practices)	FMUs
L-4	Consider impacts on allotment management during wildland fire operations. (SUP, WFU, RX, NF, ESR)	All
Woodland/Forestry		
WF-1	Planned projects should be consistent with HFRA Section 102(e) (2) to maintain or contribute to the restoration of old-growth stands to a pre-fire suppression condition and to retain large trees contributing to old-growth structure. (SUP, WFU, RX, NF)	All
WF-2	During planning, evaluate opportunities to utilize forest and woodland products prior to implementing prescribed fire activities. Include opportunities to use forest and woodland product sales to accomplish non-fire fuel treatments. In forest and woodland stands, consider developing silvicultural prescriptions concurrently with fuel treatments prescriptions. (RX, NF)	All
WF-3	Protect bristlecone pine stands. Fires would be kept to 50 acres 90% of the time in FILs (Fire Intensity Levels) 1-4. (SUP, WFU, RX)	B-4, C-4, D-1, D-2, D-3
Vegetation including Special Status Plants		
V-1	When restoring or rehabilitating disturbed rangelands, non-intrusive, nonnative plant species are appropriate for use when native species: (1) are not available; (2) are not economically feasible; (3) cannot achieve ecological objectives as well as nonnative species; and/or (4) cannot compete with already established native species (Noxious Weeds Executive Order 13112 2/3/1999; BLM Manual 9015; BLM ROD 13 Western States Vegetation Treatment EIS 1991). (RX, NF, ESR)	All
Fish and Wildlife including Special Status species		
FWSS-1	Avoid treatments during nesting, fawning, spawning, or other critical periods for wildlife or fish. (RX, NF, ESR)	All
FWSS-2	Avoid if possible or limit the size of, wildland fires in important wildlife habitats such as, mule deer winter range, riparian and occupied sage grouse habitat. Use resource advisors to help prioritize resources and develop Wildland Fire Situation Analyses (WFSAs) and Wildland Fire Implementation Plans (WFIPs) when important habitats may be impacted. (SUP, WFU)	All
FWSS-3	Minimize wildfire size and frequency in sagebrush communities where sage grouse habitat objectives would not be met if a fire occurs. Prioritize wildfire suppression in sagebrush habitat with an understory of invasive, annual species. Retain unburned islands and patches of sagebrush unless there are compelling safety, private property, and resource protection or control objectives at risk. Minimize burn-out operations (to minimize burned acres) in occupied sage-grouse habitats when there are no threats to human life and/or important resources. (SUP)	All
FWSS-4	Establish fuels treatment projects at strategic locations to minimize size of wildfires and limit further loss of sagebrush. Fuel treatments may include greenstripping to help reduce the spread of wildfires into sagebrush communities. (RX, NF)	All
FWSS-5	Use wildland fire to meet wildlife objectives. Evaluate impacts on sage grouse habitat in areas where wildland fire use for resource benefit may be implemented. (WFU, RX)	All
FWSS-6	Create small openings in continuous or dense sagebrush (>30% canopy cover) to create a mosaic of multiple-age classes and associated understory diversity across the landscape to benefit sagebrush-dependent species. (WFU, RX, NF)	All
FWSS-7	On sites that are currently occupied by forests or woodlands, but historically supported sagebrush communities, implement treatments (fire, cutting, chaining, seeding, etc.) to reestablish sagebrush communities. (RX, NF)	All

Code	Protection Measures (and applicable fire management practices)	FMUs
FWSS-8	Evaluate and monitor burned areas and continue management restrictions until the recovering and/or seeded plant community reflect the desired condition. (SUP, WFU, RX, ESR)	All
FWSS-9	Utilize the Emergency Stabilization and Rehabilitation program to apply appropriate post-fire treatments within crucial wildlife habitats, including sage grouse habitats. Minimize seeding with non-native species that may create a continuous perennial grass cover and restrict establishment of native vegetation. Seed mixtures should be designed to re-establish important seasonal habitat components for sage grouse. Leks should not be re-seeded with plants that change the vegetation height previously found on the lek. Forbs should be stressed in early and late brood-rearing habitats. In situations of limited funds for ESR actions, prioritize rehabilitation of sage grouse habitats. (ESR)	All
FWSS-10	In mountain brush vegetation types, where critical mule deer and bison habitat has been identified, allow wildland fires to burn up to 25% of the area. If the burn is extremely hot and kills the majority of the browse species, reseed using the following mixture: from 5,500 feet and above, use bitterbrush, serviceberry, mountain mahogany, Indian ricegrass, and bluebunch wheatgrass; below 5,500 feet use Wyoming sage, four wing saltbrush, cliffrose, and bluebunch wheatgrass. Use 12 lbs./acre on each elevation zone. (SUP, WFU)	D-10
Soil		
S-1	Avoid heavy equipment use on highly erosive soils (soils with low soil loss tolerance), wet or boggy soils, and slopes greater than 30%, unless otherwise analyzed and allowed under appropriate NEPA evaluation with implementation of additional erosion control and other soil protection mitigation measures. (SUP, WFU, RX, NF, ESR)	All
S-2	There may be situations where high intensity fire would occur on sensitive and erosive soil types during wildland fire, wildland fire use or prescribed fire. If significant areas of soil show evidence of high severity fire, then evaluate area for soil erosion potential and downstream values at risk and implement appropriate or necessary soil stabilization actions such as mulching or seeding to avoid excessive wind and water erosion. (SUP, WFU, RX)	All
S-3	Complete necessary rehabilitation on firelines or other areas of direct soil disturbance, including but not limited to waterbarring firelines, covering and mulching firelines with slash, tilling and/or subsoiling compacted areas, scarification of vehicle tracks, OHV closures, seeding and/or mulching for erosion protection. (SUP, WFU, RX)	All
S-4	When using mechanical fuels reduction treatments, limit tractor and heavy equipment use to periods of low soil moisture to reduce the risk of soil compaction. If this is not practical, evaluate sites, post treatment, and if necessary, implement appropriate remediation, such as subsoiling, as part of the operation. (NF)	All
S-5	Treatments such as chaining, plowing, and roller chopping shall be conducted as much as practical on the contour to reduce soil erosion (BLM ROD 13 Western States Vegetation Treatment EIS 1991). (NF, ESR)	All
Recreation		
REC-1	Wildfire suppression efforts would preferentially protect Special Recreation Management Areas and recreation site infrastructure in line with fire management goals and objectives. (SUP)	All
REC-2	Vehicle tracks created off of established routes would be obliterated after fire management actions in order to reduce unauthorized OHV travel. (SUP, WFU, RX, NF, ESR)	All
REC-3	Do not use Fishlake for helicopter water drops to protect recreational uses. (SUP, WFU)	B-7
REC-4	Contact the resource advisor for location of youth groups before any fire management activity. (SUP, WFU, RX, NF, ESR)	C-10, D-10

Code	Protection Measures (and applicable fire management practices)	FMUs
Mineral Resources		
M-1	A safety buffer should be maintained between fire management activities and at-risk facilities. (SUP, WFU, RX)	All
M-2	Suppress fires that may threaten the SUFCO mine. (SUP, WFU, RX)	B-4
M-3	The Kern River Natural Gas Pipeline runs through this FMU. Crossing the gas pipeline with heavy equipment needs to be coordinated with the pipeline owners. (SUP, WFU, RX, NF, ESR)	A-1, C-1, C-4
M-4	In the Eureka and Mammoth areas, mines are very common and need to be addressed on a site-by-site basis. (SUP, WFU, RX, NF, ESR)	C-4
Paleontology		
P-1	Plan and implement projects consistent with BLM Manual and Handbook H-8270-1, Chapter III (A) and III (B) in order to avoid areas where significant fossils are known or predicted to occur, or to provide for other mitigation of possible adverse effects. (RX, NF, ESR)	All
P-2	In the event that paleontological resources are discovered in the course of surface fire management activities, including fires suppression, efforts should be made to protect these resources. (SUP, WFU, RX, NF, ESR)	All
Lands/Access		
L-1	Fire management practices would be designed to avoid or otherwise ensure the protection of authorized rights-of-way and other facilities located on the public lands, including coordination with holders of major rights-of-way systems within rights-of-way corridors and communication sites. (WFU, RX, NF, ESR)	All
L-2	Individual project plans will, as appropriate, identify and analyze access requirements for the timely implementation of fire management activities. Where legal access needs are not required, appropriate coordination with non-federal land owners would occur. (RX, NF, ESR)	All
L-3	The actions of any fire management practice shall not destroy, deface, change, or remove to another place any monument or witness tree of the Public Land Survey System. Cadastral Surveys (see 18 USC Sec. 1858, Title 18, Part I, Chapter 91, Section 1858) (SUP, WFU, RX, NF, ESR)	All
Wild Horses and Burros		
WHB-1	Avoid fencing that would restrict access to water. (ESR)	All

Appendix F
Fire's Interaction with Resources

Fire's Interaction with Resources

Fire's Interactions with Air Resources

Wildland fires are a source of air pollutant emissions during combustion of vegetation. The major pollutant of concern in smoke from fire is fine particulate matter, both $PM_{2.5}$ and PM_{10} (Sandberg et al. 2002), which is specified in the Utah SMP as the primary indicator for ambient air quality (Utah Smoke Management Plan 2000).

The amount of PM emissions depends on the size and intensity of the fire, the fuel types and moisture content, and available fuels load. The level of resulting air quality impact depends on the amount and duration of emissions, atmospheric dispersion conditions, and terrain. Although wildland fires may occur at any time, they are most likely to occur in the planning area during summer months (wildland fire season) due to higher temperatures, drier conditions, and increased fuel loads, such as dry grasses. The magnitude and extent of air quality effects resulting from the wildland fire and prescribed fire are too complex to quantify due to the variability of potential fire management activities and the period of time each could occur.

Fire's Interaction with Areas of Critical Environmental Concern

In many cases, fire is a natural part of the character of an area. However, fire could damage the relevant and important values for which each ACEC was originally designated (see fish and wildlife, special status species, vegetation, and cultural resources sections of this chapter). These disturbances, with some exceptions, would often be temporary and short-term, while relevant and important values are assessed on a long-term scale.

Fire's Interaction with Cultural Resources

The understanding of how fire affects cultural resources is necessary in order to analyze the impact of proposed management actions covered in Chapter 4. These interactions are context-dependent and vary by temperature and duration of exposure to heat. Generally, higher temperatures and/or longer duration of exposure to heat increase the potential for damage to cultural resources. Variables that affect temperature and duration include type of fuel, fuel load and distribution, fuel moisture and soil type and moisture. As a general rule, fire does not affect buried cultural materials. Studies show that even a few centimeters of soil cover (10 cm) are sufficient to protect cultural materials (Oster n.d.). However, there are times when conditions do carry heat below the surface, with the potential to affect buried materials. These conditions include stumps that smolder and burn, heavy duff, surface logs, and roots. Fires that burn hot and fast through a site may have less of an effect on certain types of cultural materials than fires that smolder in the duff or logs that burn for a period of time.

Prehistoric and historic resources potentially affected by fire may be inorganic (lithic, ceramics, cans, glass, rock art, etc.) or organic (basketry, wooden structures, dendroglyphs, etc.). Certain resources that are important for dating archaeological sites may also be affected. Generally, organic materials are more at risk as they tend to burn or alter at lower temperatures than inorganic items.

Fire can affect chipped and groundstone tools through changes in morphology rather than in chemistry. Exposure to heat and rapid cooling may cause fracturing, potlidding, crazing, shattering, and changes in color and internal luster, which might reduce an artifact's ability to render information about the past. Deal (n.d.), Buenger (2003), Loyd et al. (2002), Shackley and Dillon (2002), and Waechter (n.d.) provide data concerning the effects of temperature on obsidian, various silicates (including chert), basalt and sandstone used for groundstone. Generally, hotter temperatures and longer exposure to fire may affect lithic materials. When these materials are likely to be present, it may be necessary to take protective measures.

Different types of clays, inclusions, and manufacturing techniques lead to different effects among distinct ceramic types. Heat damage is not as much of a consideration for this artifact type as it is for others. Generally, structural damage does not occur until temperatures exceed the original firing temperature. The main type of damage noted is to the surface decoration or glaze (Andrews 2004; Rude n.d.). Generally, Pyne 1996 suggests that when fires remain below 500° C and occur within 30 minutes (as is typical for prescribed burns), little damage to artifacts and resources even at shallow depths is likely to occur.

Inorganic historic artifacts are generally safe from fire, but some artifacts such as soldered cans may melt at temperatures as low as 137° to 177° C (Haecker n.d). Can morphology may be damaged and ceramic artifacts may crackle or spall in lower temperature fires. Other materials, such as machinery utilized in historic mining, are less susceptible. Inorganic structures constructed of sandstone, adobe, cement-mortared fieldstone, firebrick, cinder block, or cement aggregate are generally fire-resistant. Fracturing and spalling may occur at 700° C (Buenger 2003). Wooden sub-structures (common in adobe structures) would be damaged, possibly compromising the structure as a whole. Historic earthworks such as trails, roads, irrigation ditches, canals, etc. are less sensitive to fire.

Fire has the potential to damage rock art. Though there are no specific temperature guidelines for rock art, fire effects include soot smudging and discoloration from smoke, which obscure the rock art images; degradation of the rock surface from spalling, exfoliation and increased weathering; changes in organic paints due to heat; and damage to rock varnish, which may destroy its potential to date the art (Tratebas 2004; Kelly and McCarthy 2001).

Organic artifacts (e.g., basketry, digging sticks, clothing, textiles) and features (e.g., structures, bow-stave trees, wikiups, culturally modified trees, historic timber structures) made of or containing organics such as wood, leather and hide or cordage would need protection or treatment before any fire burns through a site containing such items. Bone and shell can sustain some degree of burning without complete destruction (Buenger 2003). Plant and animal residues may survive exposure to fire. Pollen may be destroyed at temperatures greater than 300° C (572 F), but animal proteins survive to 800° C (1472 F).

Determining temporal context is an important part of archaeology. Fire has the potential to adversely impact the dating potential of archaeological data. Fire is likely to damage organic material such as bone, wood, or charcoal that yield radiocarbon dates. Fire can modify or damage obsidian hydration rinds, thus compromising obsidian hydration dates (Deal n.d.; Buenger 2003; Loyd et al. 2002; Shackley and Dillon 2002; Solomon 2002). Finally, temperatures that exceed original firing temperatures (generally 400° C) would destroy the potential for thermoluminessence dating of ceramics (Rude n.d.).

Fire's Interaction with Invasive and Non-Native Species

Wherever cheatgrass or red brome dominate, the prevailing FRCC is 3 due to the loss of key ecosystem components such as native species. The establishment of these invasive grasses fosters much more frequent fire return intervals. The presence of grass in a wildland community extends the time during which the community is susceptible to wildland fire ignitions. In the summer, cheatgrass dries out four to six weeks earlier than perennial grasses and forms a fine-textured, highly flammable fuel. Cheatgrass may also be susceptible to fire one to two months longer in the fall (Paysen et. al. 2000). Dead culms and stems of red brome may persist on the average for two years promoting fast, hot fires where abundant.

The response of knapweeds to fire is unclear and appears to differ regionally, by density of infestation, the time of year, and by the severity of fire (Tirmenstein 1999). Even if they are top-killed by fire, which may weaken the plant, it is likely that they would survive due to their long taproots (in the case of Russian knapweed these roots can penetrate over 23 feet deep). They accomplish this by re-sprouting from the taproot if the root crown is not killed. Also, if any infested areas are left unburned, they readily establish in

burned areas by dispersing seed through a tumble-weed action. They appear to be most vulnerable to fire in the seedling and rosette stages.

Fire's Interaction with Native American Religious Concerns

The presence of fire prehistorically and historically in the planning area is an integral part of the landscape and, by association, the traditional belief system of Native Americans. Fire in its natural form, where the occurrence of more but lower severity events are more typical relative to current events, represent a continuation of the cycle of life intertwined in Native American beliefs. Both high- and low-severity fires have the potential to impact physical characteristics of features considered part of Native American religions. These may include the destruction of constructed features and changes to visual characteristics of a place important to a Native American belief system. The occurrence of high-severity fires would increase the chance that these changes would be longer lasting and alter the properties to a greater degree.

Fire's Interaction with Special Status Species

Effects of fire on special status species and their habitat vary widely depending upon the size and intensity of the fire, fuel type, location, topography, season, and duration. High-severity wind and fire can damage large areas of habitat and make recovery of those habitats a long process. Both low- and high-severity wildland fire can damage important habitat, displace animal species, and inflict direct mortality. However, low-severity fires have greater potential to enhance and sustain a more natural and beneficial habitat.

Fire's Interactions with Surface Water

Watersheds denuded by wildland fire are subject to accelerated soil erosion, reduced soil moisture, poor plant growth, and the loss of other ecosystem components. Wildland fire can also increase water temperature, alter stream channel morphology, affect floodplain functions and values, and increase nutrient and sediment loads to downstream waters. Sediment from accelerated soil erosion and elevated levels of nitrogen and phosphorous from ash are common in water after wildland fires (NWCG 2001).

Wildland fires reduce vegetation cover, especially in the short term, which intercepts precipitation before it hits the soil surface. The lack of vegetation cover on burned areas could allow precipitation to increase surface runoff, soil loss, and sediment input to surface waters. These sites could also have lower soil-water infiltration rates, which increase surface runoff and decrease soil moisture available for plants. The seasonal timing, size, duration, and severity of fires influence the magnitude of effects.

Burned watersheds generally respond to rainfall faster than unburned watersheds, potentially increasing the potential for flash flooding (Anderson et al. 1976). Water-repellent soils and cover loss could cause flood peaks to arrive faster, rise to higher levels, and entrain greater amounts of bedload and suspended sediments.

Wildland fire could have many effects on stream habitats, including changes in soil erosion, turbidity, sediment loads, and nutrient loads, as well as indirect effects such as changes in dissolved oxygen concentrations and algal growth. Sediment input could reduce the area suitable for spawning or smother fish eggs with fine materials. Removal of streamside vegetation increases water temperatures, increases streambank erosion, and the available streamside habitat (Monsen et al. 2004).

Fire's Interaction with Groundwater Resources

Fire can damage accumulated forest floor material and vegetation, altering infiltration to groundwater by exposing soils to raindrop impact or creating short-term water-repellent conditions (MacDonald and Huffman 2004). Burned areas could also be more susceptible to erosion, delivering minerals to recharge areas. Effects of fire on groundwater, however, are generally not substantial due to the common depth of

useable groundwater (tens to hundreds of feet) in relation to the depth of fire effects on soil and recharge (inches to feet).

Fire's Interaction with Wetlands and Riparian Zones

Historically fires were an important component of the disturbance regime for watersheds and aquatic ecosystems. Fire in riparian communities would have been infrequent and varied from small size (with highly mosaic burn patterns as a result of the higher moisture content generally present in riparian areas/species) to stand-replacing burns likely to have occurred only in extreme drought periods. Large fires supplied woody debris and triggered hydrologic events and debris flows that transported coarse substrates to stream channels (Rieman et al. in press). These processes may have provided the materials that maintained productive habitats for fish and other organisms (Swanson et al. 1990)

Fire suppression and control of wildland fires have altered the natural process of periodic burning and resulted in fuel load buildups, increases in understory and brush, and increases in stand density (Wright 1990; Covington and Moore 1994). The re-sprouting ability of invasive species gives them a long-term ecological edge over native species in regard to recovery after fire. After the fires, tamarisk sprouts vigorously, while native riparian trees and shrubs generally do not (Barrows 1996).

Direct effects of fires include heating or abrupt changes in water chemistry (Minshall et al. 1989; McMahon and de Clesta 1990; Rinne 1996; Beeny and Parker 1998). In the Stanislaus Complex of 1987 and other prescribed fires on the Stanislaus National Forest, Roberson noted that vigor of riparian species increased dramatically following the fires. This was partially attributed to lack of competition from adjacent vegetation (especially shading from dense, forested canopies). Indirect effects were changes in hydrologic regime, erosion, debris flows, woody debris loading, and changes to riparian cover (Swanson and Lienkaemper 1978; Brown 1989; Megahan 1991; Bozek and Young 1994).

Fire's Interaction with Wild and Scenic Rivers Eligibility

Fire would have impacts on the resources within the eligible area (including vegetation, fish and wildlife, soils and water, etc). Temporary disturbances may occur to visual resources and scenic values; however these effects would be short-term, while outstanding remarkable values are assessed on a long-term scale. High-severity wildland fire would increase the likelihood that these effects would be longer lasting and more destructive to the values identified for protection. Fire would likely have little effect on the eligibility or suitability of a river or river segment for Wild and Scenic River designation.

Fire's Interaction with Wilderness Study Areas

In many cases, fire is a natural part of the wilderness character of an area. (BLM 1995) Fire would have impacts on the resources within the eligible area (including vegetation, fish and wildlife, soils and water, etc). Temporary disturbances may occur to resources and values; however, these effects would be short-term while wilderness values are assessed on a long-term scale. Fire would have likely have little or no effect on the eligibility of a WSA.

Fire's Interaction with Livestock Grazing

The burning of rangeland can result in an increase in the production of perennial grasses and grazing capacity. This is primarily accomplished by the removal of dense stands of sagebrush and other brush species (BLM 1991). However, a short-term loss of forage may occur following a fire event. A high severity fire has the potential to extend the time frame and decrease the capability for the generation of forage on rangelands through soil sterilization and loss of the native seed bank. High severity fires may also increase the potential

for undesirable forage species to extent their distribution on a rangeland. The physical destruction of allotment improvements may also occur, restricting use of the allotment until they are rebuilt. The potential for this increases with higher severity fire events, due to increased heat or fire duration around both combustible and non-combustible allotment improvement infrastructure. Mortality of livestock can occur due to the direct effects of fire. High severity fires moving quickly would have a greater chance at causing mortality.

Fire's Interaction with Woodlands and Forestry

From a commodity standpoint, wildland fire often precludes the use of woodlands and forests for commercial products. Depending on the degree of consumption, burned wood may or may not be useful commercially. Burned trees, if only partially consumed, can still be used for firewood, lumber, pulp and some other fiber products. Wildland fire can completely consume all woodland and forest products making them unavailable for commercial uses. Even low severity fire would consume pine nuts and render some fiber unusable for certain products. In the long term, frequent, low intensity fire would remove competing vegetation and lower branches of conifers, which would eventually produce a higher quality lumber product in the form of larger trees with fewer knots.

Fire's Interaction with Salt Desert Shrub Vegetation Type

Fire frequency has been estimated at 35 to more than 300 years and is historically classified as Fire Regime V. Most species of this type are not fire adapted and are considered climax the exception is threadleaf rabbitbrush (which is sensitive to competition when growing with other species but may dominate a post-burn site). Because rabbitbrush easily establishes from seed after fire, it is considered fire adaptable. Due to the risk of losing key ecosystem components and greatly increased fire regimes as invasive annual grasses dominate, salt desert shrub is typically classified as FRCC 2 or FRCC 3, depending on the relative departure from its historic Fire Regime.

A lack of continuous cover (fuels) made fire rare to non-existent in salt desert shrub communities. Historically, these types did not burn often enough or in large enough patches to support dominance of fire-adapted plants. Most salt desert shrub species do not readily regenerate following fire. Further expansion of invasive species following fire is a major concern for salt desert shrub communities.

Fire's Interaction with Sagebrush Vegetation Type

Pre-settlement, stand-replacing fire frequencies for low-elevation sagebrush are estimated to vary from 60 to 110 years (Fire Regime II) (Whisenant 1990; Peters and Bunting 1994; Miller et al. 2001). Because of the high risk of losing key ecosystem components following fire due to cheatgrass invasion, on the Richfield planning area, 100 percent of the sagebrush type is in FRCC 3 condition.

Wyoming and basin big sagebrush do not sprout after fire, and low- to high-intensity fires kill most plants. Generally, the herbaceous understory composition does not determine the intensity and severity of wildland fires—sagebrush itself is the primary fire carrier. The high canopy cover associated with late, mature sagebrush stands likely facilitated historic stand-replacing fires. A sagebrush stand with a robust understory of native grasses and forbs would generally be replaced after fire with native perennial grassland, which would have eventually progressed through seral stages to sagebrush communities. Although sagebrush does not re-sprout with fire, it is a prolific seeder (a healthy, mature plant may produce 500,000 seeds) and if a seed source is present, re-establishment is quite rapid and dominance would occur within 20 years (Winward et al. 1997).

In the absence of fire, sage canopy cover increases. According to Winward (2004), the maximum canopy cover for sagebrush is 30 percent; anytime canopy cover reaches more than 15 percent, the sage individuals compete with each other. Because sagebrush is a relatively short-lived species, approximately 60 years, in the absence of fire there is no recruitment of younger individuals. Consequently, the stand has the tendency to become old and decadent.

Fire's Interaction with Pinyon and Juniper Woodlands

Most of the area where pinyon and juniper currently dominates was historically characterized by fires burning every 15 to 50 years (Kitchen 2004; Miller and Tausch 2001). Below 7,000 feet elevation, these woodlands are characterized by dense closed stands of pinyon and juniper, scarce understory, and high potential for cheatgrass invasion following fire, placing them in FRCC 3. Additionally, prolonged drought has predisposed many pinyon pine stands in the planning area to insect infestations, primarily the *Ips* ssp. beetle, whose larvae girdle the tree resulting in tree mortality. This has increased the fuel load. Above 7,000 feet, these woodlands are characterized by encroached pinyon and juniper. Because the woodlands are less dense than FRCC 3 and have a lower risk of cheatgrass invasion following fire, they are considered FRCC 2.

Old-growth pinyon and juniper is estimated to be less than 10 percent of the current area classified as pinyon and juniper woodlands (Miller and Tausch 2001). Old-growth pinyon and juniper is often restricted to fire-safe habitats (e.g., steep, dissected, and rocky terrain, and in thin substrates along ridges) where they are considered climax. Fire frequency in these climax pinyon and juniper sites has been estimated at 200 to more than 300 years for old-growth pinyon and juniper (Romme et al. 2002; Goodrich and Barber 1999) and would be classified as Fire Regime V.

Because it is a non-sprouter and is thin-barked when young, fire was the major historical cause of destruction for young juniper trees. However, adult juniper trees in mature stands are difficult to burn since the understory is usually sparse (older trees succumb to fire when 60 percent of the crown is scorched). Pure juniper stands need 35 mph winds or greater to carry fire through the canopy (Vegetation Types of the Wasatch-Cache National Forest 1991). When they do ignite, these closed forests often support high intensity, stand-replacing crown fires covering large landscapes that can endanger firefighters and the general public (Keyes et al. 2003). It is generally agreed that fire was the most important natural disturbance that impacted distribution of juniper and/or pinyon and juniper woodlands before the introduction of livestock in the 19th century (Miller and Rose 1999). Burkhardt and Tisdale (1976; Tirmenstein 1999) concluded that fire frequencies of 30 to 40 years would help keep juniper from expanding into mountain big sagebrush communities.

Fire's Interaction with Grassland Types

Perennial grasses respond vigorously to fires of various intensities by re-sprouting following fire. Fast, high-intensity fires have lower severity that seldom causes substantial mortality to native perennial bunchgrasses. Slow-backing fires have a greater severity; mortality to native perennial bunchgrasses may be high under these conditions. With most natural ignitions, the predominant fire spread would be as a fast-moving head fire.

Fire's Interaction with Ponderosa Pine

Ponderosa pines have thick bark, which protects them from serious damage from surface fires. However, in the absence of fire (and an increase in grazing), ponderosa pines increase in density or other woody species like juniper or shade-tolerant firs encroach in the understory, resulting in an increased risk of crown fire. Also, increased density of shade-tolerant species can place greater stress on larger old trees, mostly due to competition from other species resulting in increased susceptibility to insects and disease (Keyes et al, 2003).

Fire frequency for ponderosa pine communities ranges from 10 to 40 years with low- to mixed-severity fires (FEIS 2004). These forests have typically missed between five and ten fire cycles in the years of wildfire suppression and as result may have a higher composition of woody vegetation in the understory.

Fire's Interaction with Mountain Shrub Vegetation Type

Stand replacing fire frequency ranges from 25 to 100 years in mountain shrub (Gruell and Loope 1973), though return intervals may vary widely with changes in elevation, aspect, site moisture, and the associated forest or woodland type. Mountain shrubs are classified as Fire Regimes I (e.g., Gambel oak), II (e.g., mixed mountain shrub or maple), and IV (e.g., mountain mahogany), depending on the dominant species and the site. The FRCC also varies depending on the dominant species and the understory. Mountain shrub communities at lower elevations (less than 6,500 feet) are classified as FRCC 3 due to the high risk of cheatgrass invasion following fire. On the Richfield planning area, three percent of the mountain shrub vegetation type is in a FRCC 1, whereas 97 percent is in a FRCC 2. Some species, like oak, readily re-sprout after fire because they reproduce vegetatively. Others, like Ceanothus, have specialized seed, which enable it to readily invade burns (Knight 1994), while some are intolerant of fire, like curl-leaf mountain mahogany, mountain big sagebrush and bitterbrush. This may cause a temporary shift in the species composition; however, most mountain shrub communities generally recover rapidly following wildland fire and are considered to be fire tolerant.

Fire's Interaction with Mixed Conifer Vegetation Type

Fire frequencies in mixed conifer range from 100 to 300 years. These forests are characterized by a combination of understory and complete stand-replacement fire regimes (Arno 2000). Mixed conifer is classified as Fire Regime III or IV depending on the elevation and related dominant species. Fire Regime III would characterize conifer-shrub communities, occurring at lower elevations that have pure conifer stands. Due to the longer historic fire return intervals and well-functioning vegetation attributes, mixed conifer is classified as FRCC 1 when associated with Fire Regime IV, and FRCC 2 when associated with Fire Regime III.

In recent years, prolonged drought has predisposed species like Douglas-fir to insects (bark beetles), resulting in an increased fuel load. Dead woody fuels are accumulating, either standing and on the ground, often in a haphazard manner; with the greatest fuel loadings occurring on the most productive sites, which are predominantly stand-replacement fire regimes. This mixed-severity fire regime often results in a mosaic pattern of stand structure and fuels. Past stand-burn mosaics tend to increase the probability that subsequent fires would also burn in a mixed pattern (Arno 2000). When fires do occur, they tend to be intense and often sterilize the ground, with some 30-year-old fire scars showing very little vegetation returning (USDA 2002).

Fire's Interaction with Oak

Gambel oak is a fire-adapted species, which responds to fire by vegetative sprouting. Fire in Gambel oak stands may promote a brief grass-forb stage depending upon fire intensity and frequency. In most situations, Gambel oak resprouts vigorously the 1st growing season following fire. If successive fires occur at this stage, Gambel oak stands may be reduced to a grass-forb stage. In absence of fire, sprouts form young poles. At this stage fires are stand replacement, either creating openings within stands for colonization by resprouts or a complete recycling back to a grass-forb stage. In the absence of fire, Gambel oak stands reach maturity in 60 to 80 years. Fire response in mature stands is similar to that in young poles. A severe fire would recycle the stand; low-severity fires create openings for resprouts. At 80 years Gambel oak stems die naturally, creating more openings for sprouts ((Brown and Smith 2000).

Fire's Interaction with Aspen

Fire frequencies range between 25 to 100 years with mixed severity (Gruell and Loope 1974). Because of their high water content, aspen stands do not easily burn and often act as natural fuel breaks during wildland fires. Fire regimes and vegetation structure have been moderately altered from the historical conditions, mostly as a result of conifer encroachment. Because they are thin barked, aspen-dominated sites are particularly susceptible to mortality of aboveground stems from fire of low intensity, even though aspen is well adapted to regeneration by sprouting after fire (Jones and DeByle 1985; Mutch 1970). Fires in young aspen stands tend to be low-intensity surface fires unless there is a great deal of understory fuel. In older stands, during the warmest and/or driest months of the year, abundant fuel can lead to higher intensity fires. Decadent aspen stands and other areas with thin, acidic soils may be less vigorous at regenerating via suckering, and may tend to support conifers even after fire (USDA 2002i).

Fire's Interaction with Fisheries and Wildlife Resources

Effects of fire on special status species and their habitat vary widely depending upon the size and intensity of the fire, fuel type, location, topography, season, and duration. High-severity wind and fire can damage large areas of habitat and make recovery of those habitats a long process. Both low- and high-severity wildland fire can damage important habitat, displace animal species, and inflict direct mortality. However, low-severity fires have greater potential to enhance and sustain a more natural and beneficial habitat.

Fire's Interaction with Soil Resources

Fires affect soils primarily by consuming live or dead vegetation cover, litter, and organic soil layers and the resulting loss of soil stabilizing organic material such as root structure. Fire may also alter soil chemical properties, post-fire soil temperatures, microorganism populations and their activity rates, erosion rates, increase nutrient availability, sterilize soil, and increase soil water repellency (NWCG 2001; Centers for Water and Wildland Resources 1996). The degree of short-term effect on these soil characteristics depends on amount of vegetation, and thickness and density of litter and organic layers. Soil texture and type, soil moisture at the time of burning, and depth and duration of heat penetration into soil horizons are also critical factors (NWCG 2001). Soil water repellency (hydrophobicity) from severe fire may substantially increase runoff and erosion, but repellency has not been found to persist for more than one year after a wildland fire (MacDonald and Huffman 2004.)

The single most important factor in soil health (topsoil and nutrient loss) is the timing of vegetation recovery with the severity of precipitation rates. The potential for post-fire erosion also depends on the soil type in the area of the burn, the amount of post-fire vegetation and organic matter, the rate and amount of vegetation recovery, and slope. If post-fire rains are relatively gentle, some nutrients released by a fire may be reabsorbed; however, these nutrients are generally lost during severe, erosive rainfall.

Soil microorganisms (biological crusts) may be affected by heating from fire, as well as surface disturbances that compact or disaggregate these features. Disturbance of biological crusts can increase the potential for both water and wind erosion.

Fire's Interaction with Social and Economic Resources

The effects of fire in general to socioeconomic resources in the Richfield ROI may include loss of potential income from the harvesting of forest products; short-term displacement of game animals, resulting in decreased animal harvest; temporary loss of use of grazing allotments; permanent loss of range improvements such as water troughs, fences, and corrals; and increased costs to feed livestock and replace range improvements. The economic impact of fire for grazing would likely be negative in the short term but

can have positive economic returns due to a decrease in woody plant materials and an increase in favorable forage species. Burned forage lands generally require at least one, but generally two growing seasons to re-establish. Other examples of ways that fire interacts with local socioeconomic conditions may include temporary or permanent displacement from places of employment or residence, loss of personal safety and security, loss of property or reduction in property value, altered transportation patterns, health impacts due to impaired air quality, reduction in scenic quality, impacts on tourism, and direct costs to agencies tasked with suppression (which may be realized as income to firefighters and related support personnel).

Fire's Interaction with Wilderness Characteristics

In many cases, fire is a natural part of the wilderness character of an area (BLM 1995). Fire would have impacts on the resources within the eligible area (including vegetation, fish and wildlife, soils and water, etc). Temporary disturbances may occur to resources and values; however these effects would be short-term, while wilderness values are assessed on a long-term scale. Fire would likely have little or no effect on the wilderness characteristics of an area.

Appendix G
Federally Listed, Candidate, and Petitioned Species within the Planning Area

Federally Listed, Candidate, and Petitioned Species within the Planning Area

Common Name[a]	Scientific Name	Federal Status[b]	Vegetation Community (Substrate Type Identified for Flowering Plants Only)	Field Office
Flowering Plants				
San Rafael cactus	*Pediocactus despainii*	Endangered	Pinyon and Juniper Woodland (limestone)	Richfield
Barneby reed-mustard	*Schoenocrambe barnebyi*	Endangered	Salt Desert Shrub (clay)	Richfield
Wright fishhook cactus	*Sclerocactus wrightiae*	Endangered	Salt Desert Shrub Pinyon and Juniper Woodland Sagebrush Grassland (gypsiferous)	Richfield
Maguire daisy	*Erigeron maguirei*	Threatened	Pinyon and Juniper Woodland Mountain Shrub and Oak Ponderosa Pine Riparian / Wetland (sandstone)	Richfield
Winkler cactus	*Pediocactus winkleri*	Threatened	Salt Desert Shrub Pinyon and Juniper Woodland (clay, sandstone, sandy)	Richfield
Ute ladies'-tresses (*H*)	*Spiranthes diluvialis*	Threatened	Riparian / Wetland (hanging gardens)	Richfield, Fillmore
Last chance townsendia	*Townsendia aprica*	Threatened	Salt Desert Shrub Pinyon and Juniper Woodland (clay)	Richfield
Rabbit Valley gilia (= Wonderland Alice-flower)	*Gilia caespitosa*	Candidate	Pinyon and Juniper Woodland Mountain Shrub and Oak (gypsiferous, sandstone)	Richfield
Mussentuchit gilia	*Gilia (=Aliciella) tenuis*	Petitioned	Salt Desert Shrub Pinyon and Juniper Woodland Grassland Mountain Shrub and Oak (limestone)	Richfield
Birds				
Southwestern willow flycatcher**	*Empidonax traillii extimus*	Endangered	Riparian / Wetland	Richfield
California condor (*H, Exp*)	*Gymnogyps californianus*	Endangered, 10(j)	Salt Desert Shrub Pinyon and Juniper Woodland Sagebrush	Richfield
Bald eagle (*Br*)	*Haliaeetus leucocephalus*	Threatened	Sagebrush Mixed Conifer Riparian / Wetland	Richfield, Fillmore
Mexican spotted owl* (*Br*)	*Strix occidentalis lucida*	Threatened	Pinyon and Juniper Woodland Sagebrush Riparian / Wetland	Richfield
Western yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Riparian / Wetland	Richfield, Fillmore

Common Name[a]	Scientific Name	Federal Status[b]	Vegetation Community (Substrate Type Identified for Flowering Plants Only)	Field Office
Mammals				
Canada lynx (*H*)	*Lynx canadensis*	Threatened	Mixed Conifer	Richfield
Utah prairie dog	*Cynomys parvidens*	Threatened	Sagebrush Grassland	Richfield, Fillmore
Pygmy rabbit	*Brachylagus idahoensis*	Petitioned	Sagebrush	Richfield, Fillmore
Fish				
Humpback chub* (*H*)	*Gila cypha*	Endangered	Water	Richfield
Bonytail* (*H*)	*Gila elegans*	Endangered	Water	Richfield
Colorado pikeminnow (=squawfish)* (*H*)	*Ptychocheilus lucius*	Endangered	Water	Richfield
Razorback sucker* (*H*)	*Xyrauchen texanus*	Endangered	Water	Richfield

[a] Definitions for notations:

Species with an asterisk (*) have designated critical habitat. Counties with a double asterisk (**) have proposed critical habitat.

Br—Species known to nest or breed within the planning area.

H—Species or populations existed in historical locations (i.e., the current range or number of individuals or populations has decreased when compared to historical standards). For extirpated species, all management areas are considered historical.

Exp—Management areas contain designated use areas for experimental, nonessential populations designated under Section 10(j) of the Endangered Species Act (ESA), as amended.

[b] Definitions for species status:

Endangered species are those species or distinct populations listed by the USFWS that have a probability of worldwide extinction.

Threatened species are those species or distinct populations listed by the USFWS that are threatened with becoming endangered.

Candidate and petitioned species have no legal protection under the ESA, as amended. However, the USFWS has sufficient information on biological vulnerability and threats to candidate species that they are under active consideration by the USFWS for federal listing. For petitioned species, outside entities have submitted petitions to the USFWS to consider these species for federal listing. Candidate or petitioned species could be proposed or listed during the life of the proposed action for this project.

Species designated as "10(j)" are considered by the USFWS to be "experimental and non-essential populations" within designated use areas in Utah, as provided by Section 10(j) of the ESA, as amended. This designation provides greater management flexibility. For BLM, 10(j) populations of federally listed species are equivalent to a "proposed" status.

Species designated as "extirpated" are federally endangered, threatened, or candidate species that are considered by the USFWS to no longer occur in Utah.

Appendix H
BLM Sensitive Species within the Planning Area

BLM SENSITIVE SPECIES WITHIN THE PLANNING AREA

Common Name[a]	Scientific Name	Federal Status[b]	Vegetation Community (substrate type identified for flowering plants only)	Field Office
Flowering Plants				
Basalt milk-vetch (Silver milkvetch)	Astragalus subcinereus var. basalticus	SPS	Pinyon and Juniper Woodland Ponderosa Pine (igneous)	Richfield
Current milk-vetch	Astragalus uncialis	SPS	Salt Desert Shrub (limestone)	Fillmore
Dunes four-wing saltbush	Atriplex canescens var. gigantea	SPS	Salt Desert Shrub Pinyon and Juniper Woodland (sandy)	Fillmore
Ownbey thistle	Cirsium ownbeyi	SPS	Pinyon and Juniper Woodland Sagebrush Riparian/Wetland (sandy)	Fillmore
Mound cryptanth	Cryptantha compacta	SPS	Salt Desert Shrub (dolomitic, gravelly loam)	Fillmore
Creutzfeldt-flower	Cryptantha creutzfeldtii	SPS	Salt Desert Shrub (clay, shale)	Richfield
Small spring parsley	Cymopterus acaulis var. parvus	SPS	Salt Desert Shrub Pinyon and Juniper Woodland Sagebrush (sandy)	Fillmore
Pinnate spring parsley (Beck biscuitroot)	Cymopterus beckii	SPS	Pinyon and Juniper Woodland Mountain Shrub and Oak Ponderosa Pine (sandy)	Richfield
Nevada willowherb	Epilobium nevadense	SPS	Pinyon and Juniper Woodland Mountain Shrub and Oak (limestone, quartzite)	Fillmore
Big Flattop buckwheat (Smith wild buckwheat)	Eriogonum corymbosum var. smithii	SPS	Salt Desert Shrub Grassland (sandstone, sandy)	Richfield
Ibex buckwheat (sand-loving buckwheat)	Eriogonum nummulare var. ammophilum	SPS	Salt Desert Shrub Pinyon and Juniper Woodland (alluvium, sandy)	Fillmore
Utah spurge	Euphorbia nephradenia	SPS	Salt Desert Shrub (clay, sandy)	Richfield
Cataract gilia	Gilia latifolia var. imperialis	SPS	Salt Desert Shrub (sandstone, sandy)	Richfield
Deep Creek stickseed	Hackelia ibapensis	SPS	Mountain Shrub and Oak Mixed Conifer (granitic, quartzite)	Fillmore

Common Name[a]	Scientific Name	Federal Status[b]	Vegetation Community (substrate type identified for flowering plants only)	Field Office
Pine Valley goldenbush	Haplopappus crispus	SPS	Mountain Shrub and Oak Mixed Conifer Ponderosa Pine Aspen (gravelly loam, sandy)	Fillmore
Greenwood's goldenbush	Haplopappus lignumviridis	SPS	Riparian/Wetland (sandy)	Richfield
Four-petal jamesia	Jamesia tetrapetala	SPS	Sagebrush Mountain Shrub and Oak (limestone)	Fillmore
Claron pepperplant	Lepidium montanum var. claronense	SPS	Pinyon and Juniper Woodland Sagebrush Ponderosa Pine (limestone)	Richfield
Neese narrowleaf penstemon	Penstemon angustifolius var. dulcis	SPS	Salt Desert Shrub Pinyon and Juniper Woodland Sagebrush (sandy)	Fillmore
Utah phacelia	Phacelia utahensis	SPS	Salt Desert Shrub (clay, gypsiferous, shale)	Richfield
Cottam cinquefoil	Potentilla cottamii	SPS	Mixed Conifer (quartzite)	Fillmore
House Range primrose	Primula cusickiana var. domensis (Primula domensis)	SPS	Mountain Shrub and Oak (limestone)	Fillmore
Jones' globemallow	Sphaeralcea caespitosa var. caespitosa	SPS	Salt Desert Shrub Grassland (calcareous, dolomitic)	Fillmore
Jane's globemallow	Sphaeralcea janeae	SPS	Salt Desert Shrub (sandy)	Richfield, Fillmore
Psoralea globemallow	Sphaeralcea psoraloides	SPS	Salt Desert Shrub Pinyon and Juniper Woodland (conglomerate, gypsiferous, limestone, sandstone, shale)	Richfield
White River swertia	Swertia gypsicola	SPS	Salt Desert Shrub (gypsiferous)	Fillmore
Bicknell thelesperma (Alpine greenthread)	Thelesperma windhamii (= T. subnudum var. alpinum)	SPS	Pinyon and Juniper Woodland Mountain Shrub and Oak Mixed Conifer (clay, limestone, sandstone, sandy)	Richfield
Sevier townsendia	Townsendia jonesii var. lutea	SPS	Salt Desert Shrub Pinyon and Juniper Woodland Sagebrush (clay, shale)	Richfield, Fillmore

Common Name[a]	Scientific Name	Federal Status[b]	Vegetation Community (substrate type identified for flowering plants only)	Field Office
Frisco clover	Trifolium friscanum (=T. andersonii var. friscanum)	SPS	Pinyon and Juniper Woodland (igneous, limestone)	Fillmore
Birds				
Northern goshawk	Accipiter gentiles	CA	Mixed Conifer Riparian/Wetland	Richfield, Fillmore
Grasshopper sparrow	Ammodramus savannarum	WSC	Grassland	Richfield
Short-eared owl	Asio flammeus	WSC	Grassland	Richfield, Fillmore
Burrowing owl	Athene cunicularia	WSC	Grassland	Richfield, Fillmore
Ferruginous hawk	Buteo regalis	WSC	Sagebrush Grassland	Richfield, Fillmore
Black swift	Cypseloides niger	WSC	Mountain Shrub and Oak Mixed Conifer Riparian/Wetland Aspen	Richfield
Bobolink	Dolichonyx oryzivorus	WSC	Riparian/Wetland	Richfield, Fillmore
Lewis's woodpecker	Melanerpes lewis	WSC	Pinyon and Juniper Woodland Mountain Shrub and Oak Mixed Conifer Ponderosa Pine Riparian/Wetland	Richfield, Fillmore
Long-billed curlew	Numenius americanus	WSC	Grassland	Richfield, Fillmore
American white pelican	Pelecanus erythrorhynchos	WSC	Riparian/Wetland	Richfield, Fillmore
Three-toed woodpecker	Picoides tridactylus	WSC	Mixed Conifer Aspen	Richfield, Fillmore
Greater sage grouse	Centrocercus urophasianus	WSC	Sagebrush	Richfield, Fillmore
Mammals				
Townsend's big-eared bat	Corynorhinus townsendii	WSC	Mountain Shrub and Oak Mixed Conifer	Richfield, Fillmore
Spotted bat	Euderma maculatum	WSC	Salt Desert Shrub Mountain Shrub and Oak Mixed Conifer Ponderosa Pine	Richfield
Allen's big-eared bat	Idionycteris phyllotis	WSC	Mountain Shrub and Oak Mixed Conifer Ponderosa Pine	Richfield

Common Name[a]	Scientific Name	Federal Status[b]	Vegetation Community (substrate type identified for flowering plants only)	Field Office
Fringed myotis	Myotis thysanodes	WSC	Salt Desert Shrub Pinyon and Juniper Woodland Mixed Conifer	Richfield, Fillmore
Big free-tailed bat	Nyctinomops macrotis	WSC	Mountain Shrub and Oak Mixed Conifer	Richfield, Fillmore
Dark kangaroo mouse	Microdipodops megacephalus	WSC	Sagebrush	Fillmore
Kit fox	Vulpes macrotis	WSC	Salt Desert Shrub	Richfield, Fillmore
Fish				
Bonneville cutthroat trout	Oncorhynchus clarki utah	CA	Water	Richfield, Fillmore
Colorado River cutthroat trout	Oncorhynchus clarki pleuriticus	CA	Water	Richfield
Least chub	Iotichthys phlegethontis	CA	Water	Fillmore
Leatherside chub	Gila copei	WSC	Water	Richfield, Fillmore
Roundtail chub	Gila robusta	CA	Water	Richfield
Bluehead sucker	Catostomus discobolus	CA	Water	Richfield
Flannelmouth sucker	Catostomus latipinnis	CA	Water	Richfield
Invertebrates				
Eureka mountainsnail	Oreohelix eurekensis	WSC	Pinyon and Juniper Woodland Sagebrush Grassland Mountain Shrub and Oak Mixed Conifer Aspen	Fillmore
Cloaked physa	Physa megalochlamys	WSC	Riparian/Wetland Water	Fillmore
Utah physa	Physella utahensis	WSC	Riparian/Wetland Water	Richfield, Fillmore
Longitudinal gland pyrg	Pyrgulopsis anguina	WSC	Riparian/Wetland Water	Fillmore
Bifid duct pyrg	Pyrgulopsis peculiaris	WSC	Riparian/Wetland Water	Fillmore
Sub-globose Snake pyrg	Pyrgulopsis saxatilis	WSC	Riparian/Wetland Water	Fillmore
Southern Bonneville pyrg	Pyrgulopsis transversa	WSC	Riparian/Wetland Water	Richfield
California floater	Anodonta californiensis	WSC	Riparian/Wetland Water	Richfield, Fillmore
Amphibians				
Boreal (= Western) toad	Bufo boreas	WSC	Mixed Conifer Riparian/Wetland	Richfield

[a] Species already represented as federally listed, candidate, or petitioned species are not repeated here. Sources of information: Utah

Sensitive Species List, December 18, 2003 (State of Utah, Department of Natural Resources, Division of Wildlife Resources); Draft Bureau of Land Management Sensitive Plant Species (SPS) List for Utah (August 2002).

[b] BLM sensitive species status designations are Conservation Agreement (CA), BLM Wildlife Species of Concern (WSC), and BLM SPS. Conservation Agreement species receive special management under a Conservation Agreement in order to preclude the need for listing. Conservation Agreements are voluntary cooperative plans among resource agencies that identify threats to a species and implement conservation measures to proactively conserve and protect species in decline.

Appendix I
Biological Opinion

Terms and Conditions described in this appendix only apply to the species named in Appendix G of this document.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3).

No exemption from Section 9 of the Act is granted in this biological opinion. BLM's implementation of the Land Use Plan Amendment and Five Fire Management Plans is likely to adversely affect listed species. The likelihood of incidental take, and the identification of reasonable and prudent measures and terms and conditions to minimize such take, will be addressed in project level, and possibly programmatic level consultations. Any incidental take and measures to reduce such take cannot be effectively identified at the level of proposed action because of the uncertainty of wildland fire, broad geographic scope, and the lack of site specific information. Rather, incidental take and reasonable and prudent measures may be identified adequately through subsequent actions subject to section 7 consultations at the project and/or programmatic scale.

Even though actual take levels are unquantifiable, take will occur through harm and harassment. Therefore, we are providing the following Reasonable and Prudent Measures (RPMs) and Terms and Conditions to minimize overall take. Implementation of these RPMs and Terms and Conditions during project planning will also expedite site-specific section 7 consultation.

REASONABLE AND PRUDENT MEASURES

The U.S. Fish and Wildlife Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of black-footed ferret, Canada lynx, Utah prairie dog, Southwestern willow flycatcher, California condor, bald eagle, Mexican spotted owl, desert tortoise, Colorado pikeminnow, razorback sucker, humpback chub, bonytail, Virgin River chub, woundfin, Lahontan cutthroat trout, dwarf bear-poppy, Shivwits milk-vetch, Holmgren milk-vetch, Kodachrome bladderpod, San Rafael cactus, Siler pincushion cactus, shrubby reed-mustard, Uinta Basin hookless cactus, Ute ladies'-tresses, and last chance townsendia:

1. The Bureau of Land Management shall implement measures to minimize mortality or injury of the black-footed ferret, Canada lynx, Utah prairie dog, Southwestern willow flycatcher, California condor, bald eagle, Mexican spotted owl, desert tortoise, Colorado pikeminnow, razorback sucker, humpback chub, bonytail, Virgin River chub, woundfin, Lahontan cutthroat trout, dwarf bear-poppy, Shivwits milk-vetch, Holmgren milk-vetch, Kodachrome bladderpod, San Rafael cactus, Siler pincushion cactus, shrubby reed-mustard, Uinta Basin hookless cactus, Ute ladies'-tresses, and last chance townsendia due to proposed project activities; without placing firefighter personnel at risk.

2. The Bureau of Land Management shall implement measures to minimize harm to the black-footed ferret, Canada lynx, Utah prairie dog, Southwestern willow flycatcher, California condor, bald eagle, Mexican spotted owl, desert tortoise, Colorado pikeminnow, razorback sucker, humpback chub,

bonytail, Virgin River chub, woundfin, Lahontan cutthroat trout, dwarf bear-poppy, Shivwits milk-vetch, Holmgren milk-vetch, Kodachrome bladderpod, San Rafael cactus, Siler pincushion cactus, shrubby reed-mustard, Uinta Basin hookless cactus, Ute ladies'-tresses, and last chance townsendia through destruction of their suitable or designated critical habitats; without placing firefighter personnel at risk.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Bureau of Land Management must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary. The following terms and conditions apply to all species covered under this biological opinion, and are to be implemented in addition to the Applicant Committed Measures described in the Proposed Action:

General Terms and Conditions

1. To implement Reasonable and Prudent Measure 1:
    a. Before the beginning of each fire season, a threatened and endangered species education program will be presented to all personnel anticipated to be within federally listed species habitats during suppression activities. This program will contain information concerning the biology and distribution of listed species throughout the Fire Management Plan Planning Area, their legal status, fire suppression goals and restrictions within suitable and critical habitat. Following training, each individual will sign a completion sheet to be placed on file at the local BLM office.
    b. All project employees (including fire fighting personnel) shall be informed as to the definition of "take", the potential penalties (up to $200,000 in fines and one year in prison) for taking a species listed under the Endangered Species Act, and the terms and conditions provided in this biological opinion.
    c. A qualified Resource Advisor will be assigned to each wildfire that occurs in or threatens listed species habitat. The Resource Advisor's role is help define goals and objectives for fire suppression efforts and informs the Incident Commander (IC) of any restrictions, but does not get involved in specific suppression tactics. Resource advisors shall oversee fire suppression and suppression rehabilitation activities; to ensure protective measures endorsed by the Incident Commander are implemented.
    d. For pre-planned projects, the Authorized Officer shall designate an individual as a contact representative who will be responsible for overseeing compliance with the Applicant Committed Measures and terms and conditions contained in this biological opinion, and providing coordination with the U.S. Fish & Wildlife Service. The representative will have the authority to halt activities which may be in violation of these conditions, unless human health and safety or structures are at risk, in which case the Incident Commander overseeing the wildfire suppression actions will have the final decision making authority.
    e. Project related personnel shall not be permitted to have firearms or pets in their possession while on the project site. The rules on firearms and pets will be explained to all personnel involved with the project.
    f. If available, maps shall be provided to local dispatch centers showing general locations of listed species. Local BLM or UDWR biologists shall be consulted for

specific locations if fires occur within or near the general locations delineated on the map.

g. Conduct pre- and post- monitoring of the response to the treatments by federally listed species.

2. To implement Reasonable and Prudent Measure 2:
   a. Fingers or patches of unburned vegetation within burned areas shall not be burned out as a fire suppression measure unless required for safety concerns.
   b. Emergency Stabilization and Rehabilitation efforts must focus on areas in the spread of non-native species particularly within suitable habitat for federally listed species. The specific seed mix for use within suitable habitat for federally listed and sensitive species will be determined through coordination and section 7 consultation with the U.S. Fish and Wildlife Service.
   c. Recovery of vegetation shall be monitored, including establishment and monitoring of paired plots, inside and outside of the burned area unless the BLM and the Service concur that monitoring is not required.
   d. Site-specific projects under the Land Use Plan Amendment and Fire Management Plans shall specifically recognize the primary constituent elements necessary for functional critical habitats to ensure consistent application of measures to maintain these features in all implementation activities.
   e. The effectiveness of suppression activities and threatened and endangered species conservation measures shall be evaluated after a fire in coordination with the U.S. Fish and Wildlife Service. Procedures shall be revised as needed.
   f. Conduct pre- and post-monitoring of threatened or endangered species' habitat conditions.
   g. Temporarily close off highway vehicle (OHV) trails after a fire event until vegetation and soils recover.
   h. Obscure decommissioned trails and roads and illegal OHV trails after a fire event to prevent re-opening.

Black-Footed Ferret and Utah Prairie Dog

1. To implement Reasonable and Prudent Measures 1 and 2:
   a. Wildfires will be suppressed before they reach a prairie dog colony[1] or after they exit a colony. Active suppression efforts will not occur within a colony unless human health and safety or structures are at risk.
   b. Only hand lines will be authorized within colonies.
   c. Normally, only water shall be used on fires that occur within prairie dog colonies. If the fire Incident Commander decides that the situation requires use of chemical retardants in order to protect life and property, they may be used. The chemical composition will be supplied to the U.S. Fish and Wildlife Service during formal consultation.
   d. All vehicles shall stay on existing roads within colonies, except as stated in (e). Storage of equipment and materials shall not occur within ¼ mile of colonies. Vehicle maintenance shall not occur within these areas.
   e. If the situation would require vehicles to travel cross country within prairie dog colonies, this activity shall be cleared by an on-site biologist prior to occurring.

[1] "Prairie dog colony" refers to any occupied Utah prairie dog colony or any prairie dog colony within the range of the black footed ferret.

Vehicles shall not exceed a speed of 10 miles per hour (cross country) in occupied Utah prairie dog colonies unless a higher speed is determined to be prudent for safety reasons.

f. Within colonies, precautions shall be taken to ensure that contamination of the site by fuels, motor oils, grease, etc. does not occur and that such materials are contained and properly disposed of off-site. Inadvertent spills of petroleum based or other toxic materials shall be cleaned up and removed immediately.
g. Camps associated with fire suppression activities shall be situated outside suitable habitat.
h. If a dead or injured Utah prairie dog is located, initial notification must be made to the Service's Division of Law Enforcement, Cedar City, Utah at telephone 435-865-0861 or to the Cedar City office of the Utah Division of Wildlife Resources at telephone number 435-865-6100. Instruction for proper handling and disposition of such specimens will be issued by the Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state.
i. For the black-footed ferret, avoidance and minimization measures that should be followed are included within the *Cooperative Plan for the Reintroduction and Management of Black-Footed Ferrets in Coyote Basin, Uintah County, Utah* published by the Utah Division of Wildlife Resources in September, 1996. These measures may be updated based on the best available scientific data as it becomes available.

Canada Lynx

1. To implement Reasonable and Prudent Measures 1 and 2:
    a. The Lynx Conservation Assessment and Strategy (LCAS) shall be incorporated into project plans as appropriate, and any applicable standards, guidelines, and objectives specifically related to linkage habitat would be followed during implementation of fire management activities.

Southwestern Willow Flycatcher

1. To implement the Reasonable and Prudent Measure 1:
    a. Prior to planned project activities, action areas will be surveyed according to U.S. Fish and Wildlife Service protocol.
    b. Except where fires are active in occupied habitat, minimize unnecessary low-level helicopter flights during the breeding season (April 1 – September 30). If safety allows, approach bucket dip sites at a 90-degree direction to rivers to minimize flight time over the river corridor and occupied riparian habitats. Locate landing sites for helicopters at least ¼ mile from occupied flycatcher habitat unless human safety or property dictates otherwise.
    c. Minimize use of chainsaws or bulldozers to construct fire lines through occupied or suitable habitat except where necessary to reduce the overall acreage of occupied habitat or other important habitat areas that would otherwise be burned.
    d. Implement activities to reduce hazardous fuels or improve riparian habitats (prescribed burning or vegetation treatments) within occupied or unsurveyed suitable habitat for southwestern willow flycatchers only during the non-breeding season (October 1 to March 31).
2. To implement Reasonable and Prudent Measure 2:

a. Riparian fuel reduction actions shall be considered as experimental, and initially conducted only in unoccupied habitats until the success and ramifications are better understood. Efficacy of these actions as a fire management tool, and effects on bird habitat quality, shall be tested in a scientifically explicit, controlled fashion (Appendix L in U.S. Fish and Wildlife Service 2002).
b. In occupied or suitable flycatcher habitat, creation of fire breaks might render the habitat unsuitable (Appendix L in U.S. Fish and Wildlife Service 2002). Therefore, fire breaks shall first be conducted only in unoccupied sites, outside of proposed critical habitat, or within the following situations, as long as human safety and property allows:
    i. Along grass-edged roadways;
    ii. Where large areas of fire-prone vegetation, unsuitable for flycatcher breeding, separate a breeding site from potential ignition sources or high frequency fire areas; and
    iii. Between agricultural "burn areas" and flycatcher sites to prevent brush-pile fires from spreading into breeding sites (Appendix L in U.S. Fish and Wildlife Service 2002).
c. Controlled burns shall be avoided in occupied habitat and considered only as experimental management techniques if dealing with suitable unoccupied habitat (Appendix L in U.S. Fish and Wildlife Service 2002).
d. Fires in occupied habitat and adjacent buffer zones shall be rapidly suppressed.

California Condor and Bald Eagle

1. To implement the Reasonable and Prudent Measure 1:
    a. If California condors or bald eagles are found inhabiting (nesting) within the action area, a buffer of 1 mile surrounding the nesting area will be designated as non-treatment zones (Romin and Muck 2002).
    b. Open water sources such as "pumpkin" inflatable water storage tanks will be covered when not in use.

Mexican Spotted Owl

1. To implement Reasonable and Prudent Measure 1:
    a. Pre-planned fuels reduction projects within Mexican spotted owl primary activity centers (PAC) shall be designed to enhance habitat requirements for the Mexican spotted owl as well as for the valuable prey species they rely upon. Any project within a PAC requires additional section 7 consultation.
2. To implement Reasonable and Prudent Measure 2:
    a. Fire suppression shall be considered for wildfires in PACs.

Desert Tortoise

1. To implement Reasonable and Prudent Measure 1:
    a. Campsites, aircraft landing and fueling areas, staging areas, and helicopter dip sites shall either be located outside of desert tortoise habitat or cleared by the Resource Advisor or tortoise biologist.

b. Hand crews shall be used to build and defend fire lines. Engines can be used for support from roads. Wherever practical, fire engines must remain on roads and lay fire hose only along hand lines.
c. The Resource Advisor, tortoise biologist, or biological monitor (someone who is either qualified with a biological background or has been trained by the Resource Advisor) ensures that tortoises, burrows, and shelter sites are protected or avoided by walking in front of engines, tracked vehicles, or other fire fighting related vehicles within the critical habitat.
d. On-road travel shall be restricted to speeds (25 mph) that allow drivers to distinguish obstacles such as a rocks and tortoises.
e. Firefighters shall note locations and condition of desert tortoises and carcasses, but must not attempt to touch or move them unless the animal is in immediate danger from fire or is on a road that is receiving traffic use. Firefighters shall be encouraged to provide notes to tortoise Resource Advisor or tortoise biologist.
f. Garbage and trash must not be left in project vicinity.

2. To implement Reasonable and Prudent Measure 2:
   a. Wildfires that occur in tortoise habitats shall be suppressed as soon as possible due to the habitat changes associated with wildfire that alter food availability and the availability of plants for protection from thermal extremes and predators.
   b. Tracked vehicles have long-lasting impacts on desert soils and vegetation, and therefore their use shall be restricted to improving roads or constructing lines where a short distance of line might save a large area from fire.
   c. Rehabilitation of suppression related actions must be coordinated with the Resource Advisor to avoid further impacts. For example, the rehabilitation of lines created on the sensitive desert soils may cause more damage than the initial suppression actions. Obliterate vehicle tracks at the point they leave existing roads to prevent those tracks from becoming future trails and roads.

Lahontan Cutthroat Trout

To implement Reasonable and Prudent Measures 1 and 2, we recommend full implementation of the Memorandum of Understanding (MOU) between the BLM, Service, Utah Division of Wildlife Resources, and Utah Division of Forestry, Fire and State Lands. The purpose of this MOU is to provide a framework of cooperation for interagency fire management between the Bureau of Land Management (Salt Lake and Elko Field Offices), U. S. Fish and Wildlife Service (Region 1 and Region 6), and the Utah Department of Natural Resources (Division of Wildlife Resources and Division of Forestry, Fire, and State Lands), within the Bettridge and Morrison Creek drainages of the Pilot Mountains. This MOU contains Standard Operating Procedures to be used for the protection of the threatened Lahontan cutthroat trout and their habitat during fire suppression and rehabilitation activities in these two drainages. The Standard Operating Procedures developed through the MOU are listed below.

1. Standard Operating Procedures for Suppression Activities:
   a. Avoid the application of retardant or foam within 600 feet of the stream channel or waterway. With the exception of restricting the use of retardants and foams to 600 feet from stream channels or waterways, aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.
      i. The exceptions to this procedure are:

(1) When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy air tanker).

(2) Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

(3) When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines. This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and BLM Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

b. Do not draft fill engines that have surfactant foam mixes in tanks, directly from the stream channel.

c. A containment barrier will be constructed around all pumps and fuel containers utilized within 600 feet of the stream channel to prevent petroleum products from entering the stream. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

d. Do not dump engines filled with surfactant foam mixes within 600 feet of the stream channel.

e. Do not conduct retardant mixing operations within 600 feet of the stream channel.

f. Stream flow will not be impounded or diverted by mechanical or other means in order to facilitate extraction of water from the stream for fire suppression efforts.

g. The intake end of the draft hose will be screened to prevent entrainment of fish species. Screen opening size will be a maximum of 3/16 inch.

h. Before each fire assignment in the Elko and Salt Lake Districts, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 600 feet of natural water sources (streams or springs).

i. Only water sources identified as specified dip sites will be used to control and/or contain fire with the Bettridge and Morrison Creek drainages. Water may be obtained from the pond on the TL Bar Ranch (Donner Springs). The coordinates of this dip site are: N 41 01 22.6 X W 113 58 04.3.

j. Water extraction from streams currently occupied by LCT (including beaver ponds) is restricted.

k. Fire control lines will not cross or terminate at the stream channel. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

l. Access roads and/or fords will not be constructed across the stream channel.

m. New roads or mechanical fire control lines will not be constructed and existing roads will not be improved within 600 feet of the stream channel unless authorized by the Field Manager or the designated Field Manager representative.

2. Standard Operating Procedures for Rehabilitation Measures:

a. An assessment of the impacts of fire and fire suppression activities to LCT habitat will be completed by an interdisciplinary team of resource specialists, including the Elko and Salt Lake BLM Field Office Fisheries Biologists and Hydrologists, representatives from the Service, representatives from the Utah Division of Wildlife Resources, and representatives from Utah Division of Forestry, Fire and State Lands. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:
   i. Where determined necessary by the interdisciplinary review team, a post-fire contingency plan for immediate and effective protection, rescue, and rehabilitation of, and minimization of risk of injury to LCT populations and their habitat will be created.
   ii. Close the affected watershed and/or stream channel to livestock grazing for two or more growing seasons to allow for recovery of riparian vegetation. The appropriate length of time for closure to livestock grazing will be determined on a site specific basis based on resource data, scientific principles, and experience. Site specific monitoring will determine when resource objectives have been achieved on specific burned areas. Site specific vegetative recovery objectives will be identified by the interdisciplinary review team and included in the Notice of Closure to Livestock Grazing issued in accordance with 43 CFR 4110.3-3.
   iii. Reconstruct damaged fences and/or construct new fences to ensure protection of the stream channel from grazing. In Wilderness Study Areas, fence construction and/or reconstruction will be in accordance with Interim Management Policy Guidelines.
   iv. Monitor stream and riparian habitats to allow for comparison of post-fire impacts to existing baseline information.
   v. Where determined necessary by the interdisciplinary review team, install appropriate erosion control structures (i.e. erosion matting and/or straw bale structures, straw wattles, etc.) to mitigate overland flow effects to the stream channel.
   vi. Where determined necessary by the interdisciplinary review team, reseed and/or replant riparian/wetland areas with native plant species to facilitate re-establishment of perennial vegetation, minimize potential channel erosion, and allow for recovery of riparian functionality.
   vii. Rehabilitate improved roads located within 600 feet of the stream channel as determined necessary to mitigate potential sedimentation into the stream channel.
   viii. Implement appropriate integrated noxious weed control measures where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.
   ix. Where determined necessary by the interdisciplinary review team, initiate temporary road closures for at least one year to protect and stabilize burned areas and associated watersheds. An interdisciplinary assessment will be conducted after the first year to determine if road closures are still needed.

Threatened or Endangered Plants

1. To implement Reasonable and Prudent Measure 1:
   a. Do not allow wildland fire use or prescribed fire activities within suitable, occupied habitat.

b. When feasible (human life or property are not at risk) fire breaks shall be constructed down slope of plants and populations; if fire breaks must be sited upslope, buffers of 100 feet minimum between surface disturbances and plants and populations will be incorporated.

2. To implement Reasonable and Prudent Measure 2:
   a. Do not allow wildland fire use or prescribed fire activities within suitable, occupied habitat.
   b. For pre-planned projects within known or potential habitat, site inventories shall be conducted to determine habitat suitability prior to initiation of project activities, at a time when the plant can be detected, and during appropriate flowering periods, and will include, but not be limited to, plant species lists and habitat characteristics.
   c. For riparian/wetland-associated species, e.g. Ute ladies-tresses, avoid loss or disturbance of riparian habitats:
      i. Ensure that water extraction or disposal practices do not result in change of hydrologic regime.
   d. Limit disturbances to and within suitable habitat by staying on designated routes.
   e. Limit new access routes created by the project.
   f. Place signing to limit ATV travel in sensitive areas.
   g. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area.

Shivwits Milk-Vetch

1. To implement Reasonable and Prudent Measures 1 and 2:
   a. During wildland fire events, do not suppress wildland fire within the extremely sensitive soils (Chinle formation) unless another threatened or endangered species (i.e. desert tortoise), or life or property are at risk.
   b. Do not seed within the Chinle formation.
   c. Do not rehabilitate areas impacted by suppression activities, such as hand lines, areas that may have been trampled, or areas that may have been impacted by fire retardant drops.
   d. The effects of any fire or suppression activity within suitable habitat for the Shivwits milk-vetch will be monitored as these measures have not been tested. These measures are based on the sensitive nature of the soils that support the plant. Up-dating and fine-tuning methods to implement during wildland fire events and post emergency stabilization and rehabilitation activities shall rely upon adaptive management techniques.

Siler Pincushion Cactus

1. To implement Reasonable and Prudent Measures 1 and 2:
   a. Follow and implement the restrictions to pesticide use within suitable Siler pincushion cactus habitat developed by the Environmental Protection Agency (EPA). These limitations were excerpted from the EPA's Pesticides: Endangered Species Protection Program (http://www.epa.gov/oppfead1/endanger/arizona/cocon.htm#brady):
      i. If the active ingredient is 2, 4-D (all forms), ATRAZINE, CLOPYRALID, DICAMBA (all forms), DICHLORPROP (2, 4-DP), HEXAZINONE, MCPA (all forms), PARAQUAT, PICLORAM (all forms), or TEBUTHIURON, then do not apply this pesticide in the species habitat. For ground applications do not apply within 20 yards of the habitat, or within 100 yards for aerial applications.

ii. If the active ingredient is OXYFLUORFEN (granular or non-granular), then do not apply this pesticide in the species habitat. For ground applications do not apply within 100 yards of the habitat, or within 1/4 mile for aerial applications.

If the active ingredient is either METRIBUZIN or SULFOMETURON METHYL, then do not apply this pesticide on rights-of-way in the species habitat.

Colorado River Fishes (Colorado Pikeminnow, razorback sucker, humpback chub, bonytail) and Virgin River Fishes (Virgin River Chub and woundfin)

The BLM has incorporated Applicant Committed Resource Protection Measures into their plan that will minimize mortality or infury to these listed fish species.

Closing

The Service believes that an unquantifiable amount of incidental take will occur in the form of harm and harassment as a result of the proposed actions. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed actions. If, during the course of the actions, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Bureau of Land Management must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

REPORTING REQUIREMENTS

Upon locating dead, injured, or sick listed species, immediate notification must be made to the Service's Salt Lake City Field Office at (801) 975-3330 and the Service's Division of Law Enforcement, Ogden, Utah, at (801) 625-5570. Pertinent information including the date, time, location, and possible cause of injury or mortality of each species shall be recorded and provided to the Service. Instructions for proper care, handling, transport, and disposition of such specimens will be issued by the Service's Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state.

The BLM shall submit a report to the Service on or before (December 1) of each year in which fire management activities occurred within occupied habitat. For the listed and candidate species covered under this consultation, the report shall include: 1) the amount of potential and/or occupied habitat affected by wildfire (i.e. stream miles burned, percentage of drainage burned, fire severity map); 2) to the extent possible, the number of individuals killed from direct and indirect effects of wildfire; 3) any habitat and/or population monitoring efforts from past wildfire events; 4) a copy of the burned area emergency stabilization and rehabilitation plan; 5) implementation and effectiveness monitoring of burned area emergency stabilization and rehabilitation treatments; 6) implementation and effectiveness monitoring of the standard operating procedures; 7) recommendations for enhancing the effectiveness of the standard operating procedures; and 8) any recommendations for additional standard operating procedures. The first report shall be due to the Service on (December 1**,** 2005). The address for the Utah Fish and Wildlife Office is:

Field Supervisor
U.S. Fish and Wildlife Service
2369 West Orton Circle, Suite 50
West Valley City, Utah 84119
Telephone: (801) 975-3330