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Glenwood Springs and Kremmling Resource Management Plan Revisions

Final
Analysis of the Management Situation Kremmling Field Office

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LIST OF ACRONYMS

Acronym or Abbreviation	Full Phrase
AAQS	ambient air quality standards
ACEC	area of critical environmental concern
AMS	analysis of the management situation
APCD	Air Pollution Control Division
APD	application for permit to drill
ATV	all terrain vehicle
AUM	animal unit month
BLM	United States Department of the Interior, Bureau of Land Management
BMP	best management practice
CMB	coalbed methane
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and Environment
CDOW	Colorado Department of Natural Resources, Division of Wildlife
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNHP	Colorado Natural Heritage Program
CO2	carbon dioxide
COA	condition of approval
CSU	controlled surface use
CWCB	Colorado Water Conservation Board
EA	environmental assessment
EIS	environmental impact statement
EPCA	Energy Policy and Conservation Act Amendments of 2000
ERMA	extensive recreation management area
ESA	Endangered Species Act of 1973
ESR	Emergency Stabilization and Rehabilitation
F	degrees Fahrenheit
FAR	functioning at risk
FAR-DOWN	functioning at risk downward trend
FAR-NA	functioning at risk not apparent trend
FAR-UP	functioning at risk upward trend
FLPMA	Federal Land Policy and Management Act of 1976
FMP	fire management plan
FMU	Fire Management Unit
FWFMP	Federal Wildland Fire Management Policy
GIS	geographic information system
GSFO	Glenwood Springs Field Office
HMP	habitat management plan
I-	Interstate
IM	instruction memorandum
IMPROVE	Interagency Monitoring of Protected Visual Environments
KFO	Kremmling Field Office
LHA	land health assessment

LIST OF ACRONYMS *(continued)*

Acronym or Abbreviation	Full Phrase
MIS	Management Information System
MOU	memorandum of understanding
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NFP	National Fire Plan
NGD	no (long-term) ground disturbance
NPS	United States Department of the Interior, National Park Service
NRCS	United States Department of Agriculture, Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSO	no surface occupancy
OHV	off-highway vehicles (off-road vehicles)
PFC	proper functioning condition
PM	particulate matter
PSD	prevention of significant deterioration
R&PP	Recreation and Public Purposes
RMP	resource management plan
RMPA	resource management plan amendment
RNA	research natural area
ROD	record of decision
ROS	recreation opportunity spectrum
ROW	right-of-way
SRMA	special recreation management area
SRP	special recreation permit
SSR	site-specific relocation
TMA	travel management area
TMDL	total maximum daily load
US	United States
USC	United States Code
USDA	US Department of Agriculture
USDI	US Department of the Interior
USFS	US Department of Agriculture, Forest Service
USFWS	US Department of the Interior, Fish and Wildlife Service
USGS	US Geological Survey
US EPA	United States Environmental Protection Agency
VRM	visual resource management
WFU	wildland fire use
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WUI	wildland-urban interface
µg/m3	micrograms per cubic meter

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CHAPTER 1
INTRODUCTION

The United States (US) Department of the Interior, Bureau of Land Management (BLM), Kremmling Field Office (KFO), has initiated the planning process to revise its 1984 Resource Management Plan (RMP). The RMP governs the use, protection, and enhancement of resources on BLM-administered public lands within the KFO boundary by establishing broad land use plan decisions, such as goal, objectives, desired outcomes, land use allocations, standards and guidelines. An Environmental Impact Statement (EIS) will be prepared as part of the revision.

The management of BLM-administered public lands and federal mineral estate within the KFO boundaries (from this point referred to as the KFO) is the subject of this document (Map 1–Reference Map, **Appendix G**). Areas within the KFO administered by other federal agencies, such as the US Department of Agriculture, Forest Service (USFS), US Department of the Interior, Fish and Wildlife Service (USFWS), National Park Service (NPS), and other state agencies, such as the Colorado State Land Board, are not the subject of this document or the current planning effort. Additionally, planning decisions and descriptions in this document do not apply to private lands.

1.1 PURPOSE OF THE AMS

The Analysis of the Management Situation (AMS) is the first step in revising the 1984 Kremmling RMP. The purpose of the AMS is to summarize the existing situation, explain the need for change (the preliminary issues), and propose a range of management opportunities (the preliminary alternatives). The AMS is required to provide a starting point to describe the biological, physical, social, and economic components of the environment that would be affected by the decision made as part of the Kremmling RMP. The AMS will serve as the basis for the RMP and the associated EIS, but it is not a comprehensive, detail-oriented document, nor does it represent extreme details about various resources.

1.2 PURPOSE AND NEED OF THE RMP REVISION

The Federal Land Policy and Management Act of 1976 (FLPMA) requires that the BLM "develop, maintain, and, when appropriate, revise land use plans" (43 US Code [USC] 1712 [a]). The BLM has deemed it necessary to revise the existing RMP for the KFO based on a number of new issues that have arisen since preparation of the initial RMP in 1984. An RMP is a set of comprehensive long-range decisions concerning the use and management of resources administered by the BLM. In general, an RMP accomplishes two objectives: it provides an overview of goals, objectives, and needs associated with public lands management, and it resolves multiple-use conflicts or issues associated with those requirements that drive the preparation of the RMP.

The BLM resource management planning process, explained in Title 43 of the Code of Federal Regulations, Part 1600 (43 CFR 1600), BLM 1601 Manual, and BLM Land Use Planning Handbook (H-1601-1), falls within the framework of the National Environmental Policy Act of 1969 (NEPA) environmental analysis and decision making process. This process is described in the Council on Environmental Quality regulations of 40 CFR 1500-1508, the Department of the Interior (USDI) NEPA Manual (516 DM 1-7), and the BLM NEPA Handbook H-1790-1. This AMS is a planning precursor to developing potential alternatives, as required by NEPA regulations.

Preliminary issues to be addressed in the RMP revision include those in **Table 1-1**.

Table 1-1
Preliminary Issues

Oil and Gas Development	There is increasing demand for energy resources, including coalbed methane (CBM). Thus, the RMP will address management of energy and mineral resources, including identifying areas and conditions in which mineral development can occur.
Range Health and Upland Management	There are a growing number of resource uses that are affecting the natural function and condition of upland communities. Thus, the RMP will address the management of upland communities to support native animals, such as the greater sage–grouse *(Centrocercus urophasianus)*, and numerous wildlife and plant species and their habitat, including those that are threatened and endangered.
Water and Riparian Issues	There is a need to address the management of riparian areas along the stream and river corridors and wetlands to ensure their valuable ecological resources are protected. Thus, the RMP will address the desired outcomes/conditions for riparian areas and determine what restrictions or protective measures are needed.
Recreation Demands and Uses	Increased recreation use throughout the KFO has led to increased concerns regarding resource protection and conflicting issues. Thus, the RMP will address how to best manage for the increased and conflicting uses.
Comprehensive Travel Management and Transportation	There is a need to address increased off-highway vehicle (OHV) use and to establish travel management networks. Thus, the RMP will address which areas should be open, limited, or closed to OHV use and will delineate travel management networks within the KFO.

Table 1-1
Preliminary Issues *(continued)*

High Concentrations of Cultural Sites	There are high concentrations of unique and significant archaeological regions throughout the KFO that have been identified since the last RMP was written. Thus, the RMP will identify goals for their management and management actions and prescriptions that will contribute to achieving these goals.
Maintaining Habitat for Greater Sage-grouse and Sagebrush Obligate Species	Sagebrush habitat continues to be threatened by a variety of influences, such as conversion to agriculture, invasion by nonnative plant species, recreation, rural expansion, and associated developments. Thus, the RMP will allocate land uses and will identify management activities to help conserve sagebrush habitat and sagebrush obligate species, such as greater sage-grouse.
Rapidly Expanding Urban Interface Areas	The wildland-urban interface (WUI) areas, zones where public lands and urban lands are side by side or intermixed, have grown significantly throughout the planning area since the last RMP. Thus, the RMP will need to address management of these areas where population and development are rapidly expanding into adjacent public lands.

1.3 OVERVIEW OF THE BLM PLANNING PROCESS

The process for developing, approving, maintaining, and amending or revising RMPs began under the authority of Section 202(f) of FLPMA and Section 202(c) of NEPA. The process is guided by BLM planning regulations in 43 CFR 1600 and Council on Environmental Quality regulations in 40 CFR 1500.

The RMP is the land use planning tier of the two-tiered BLM planning process. As such, the RMP prescribes the allocation of and general future management direction for the resource and land uses of the BLM-administered public lands in the RMP planning area. In turn, the RMP guides the second tier of the planning process: the more site-specific activity or implementation planning tier and daily operations.

Activity or implementation planning extends the resource and land use decisions of the RMP into site-specific management decisions for smaller geographic units of public lands within the RMP planning area. Activity planning includes such elements as grazing plans, habitat management plans (HMPs), and interdisciplinary or coordinated activity plans that issue various land and resource use authorizations. Planning also includes identifying specific mitigation needs and developing and implementing similar plans and actions.

All management direction and actions developed as part of the BLM planning process are subject to valid existing rights and must meet the objectives of the BLM's multiple use management mandate and responsibilities (FLPMA Section 202[c] and [e]). Valid existing rights include all valid lease, permit, patent, right-of-way (ROW), or other land use right or authorization existing on the date of approval of FLPMA.

1.4 GENERAL DESCRIPTION OF THE PLANNING AREA, GEOGRAPHIC SCOPE, AND RESOURCE/PROGRAMS

The KFO covers approximately 3,115,544 acres of federal, state, and private land in Grand, Eagle, Larimer, Jackson, and Summit Counties in north-central Colorado. The area is bordered on the north by Wyoming, on the east by the Roosevelt and Arapaho National Forests and Rocky Mountain National Park, on the south by the BLM Glenwood Springs Field Office (GSFO) and White River and Arapaho National Forests, and on the west by the Routt National Forest. Of the total area, 378,491 acres are BLM-administered public lands (**Tables 1-2**, **1-3**, **1-4**) (Map 2–Land Status, **Appendix G**).

As part of the revision process, the KFO will be dividing the planning area into management units (Map 3–Management Units, **Appendix G**). Each management unit will have specific management direction for the different resources and resource uses. The boundaries were established based upon typography, issues, emphasis areas, and other factors.

Resources and resource uses discussed in this AMS include air quality, soil, vegetation, rangelands, forests and woodlands, riparian areas and wetlands, fish and wildlife habitat, special status species, fire, cultural and heritage resources, paleontological resources, special management designations, visual resources, energy and minerals, livestock grazing, recreation, lands and realty, transportation and access, and social and economic conditions.

Table 1-2
Land Status

	Acres
Bureau of Land Management	378,491.15
Colorado Division of Wildlife	19,811.21
National Park Service	97,500.85
National Recreation Area	32,507.17
National Wildlife Refuge	23,470.84
Private	839,319.51
State	95,031.98
State Forest	73,365.44
US Forest Service	1,556,045.92
Total:	**3,115,544.07**

Table 1-3
KFO Land Status by County

Land Status (acres)	Eagle County	Grand County	Jackson County	Larimer County	Routt County	Summit County
Bureau of Land Management	18,370	144,053	186,709	26,889		2,421
Colorado Division of Wildlife		15,161	2,881	1,770		
National Park Service		95,657	46.18	1,792		
National Recreation Area		32,507				
National Wildlife Refuge			23,471			
Private	11,779	334,397	368,582	64,892		59,642
State	273	36,957	50,264	7,216		322
State Forest			71,023	2,342		
US Forest Service	22,830	515,964	333,806	344,574	5,628	333,168
Total	**53,252**	**1,174,696**	**1,036,782**	**449,475**	**5,628**	**395,553**

Table 1-4
KFO Mineral Status by County

Land Status (acres)	Eagle County	Grand County	Jackson County	Larimer County	Routt County	Summit County	Total
BLM/Fed Minerals	14,143	127,087	177,608	28,149		2,421	349,407
Private Surface/Fed Minerals	2,287	100,513	238,475	23,002		11,351	375,628
State Surface/Fed Minerals		79	17,276			162	17,517
US Forest Service/Fed Minerals	14,143	502,666	328,426	333,810	5,627.45	308,465	1,493,136
DOW Surface/Fed Minerals		8,516	1,648	128			10,292
National Park/Fed Minerals		92,502	46	1,792			94,340
National Recreation Area/Fed Minerals		20,166					20,166
National Wildlife Refuge/Fed Minerals			7,490				7,490
State Forest/Fed Minerals			44	<1			45
Total	**30,573**	**851,529**	**771,014**	**386,880**	**5,627**	**322,399**	

1.5 KEY FINDINGS

The 1984 Kremmling RMP, along with subsequent amendments, has served as an effective guide for management of BLM-administered public lands within the planning area. However, there have been many changes in national and state level BLM policy (i.e. revised Planning Handbook: H-1601-1, state-level policy mandating

going to a "limited to designated travel system") and changing resource conditions and demands (i.e. increased OHV use and recreation demands unforeseen in 1984).

The KFO also completed its scoping process in May 2007. The following is a summary of the key issues raised by the public. All written scoping comments received through June 16, 2007, were evaluated and documented. A total of 105 written submissions, including a total of 766 individual comments, were received by June 16, 2007. During alternative formulation and project planning, the BLM will consider these and any other comments received during the RMP process.

Individuals provided 68% of the total comments received during the GSFO/KFO RMP scoping period. Private organizations provided 14%. Businesses submitted 4% of the total. Elected officials and law firms each provided 3% of the total number of comments received for a combined total of 6%. Federal, state, and county governmental agencies each submitted 2%, for a total of 6%. Special districts provided 2% of the total number of comments received. No comments were received from municipalities or from tribal governments. Most of the comments on planning issues focused on travel management (26%), recreation (24%), and lands and realty (11%). Special designations (8%), urban interface (7%), and energy development (7%) issues also received relatively large numbers of comments.

Issue Summary

In September 2005, the BLM prepared a Pre-Plan Analysis and Project Management Plan for the GSFO/KFO RMP/EIS. This plan, used by the interdisciplinary team to begin the planning process, summarized the purpose and need for the RMP. It also highlighted anticipated planning issues, management concerns, and preliminary planning criteria developed by the BLM interdisciplinary team during internal scoping. Based on the lands and resources managed in the planning area, these preliminary issues fell into eight preliminary issue categories in the analysis:

1. Energy development;
2. Range health/upland management;
3. Water/riparian;
4. Recreation demand and uses;
5. Comprehensive travel management and transportation;
6. Cultural resources (high concentrations of cultural sites);
7. Maintaining habitat for sage-grouse and sagebrush obligate species; and
8. Rapidly expanding urban interface areas.

Four new issue categories were identified from public input during the scoping process. In addition, other general concerns that were expressed and captured in a General Concerns category. The four additional issue statements are as follows:

9. Wildlife;
10. Vegetation;
11. Special designations; and
12. Lands and realty.

A planning issue statement was developed for each of the twelve planning issue categories. A planning issue statement was not developed for the category of Other Concerns due to the very general nature of the comments. Each planning issue statement summarizes the issues and concerns heard for each category. The twelve planning issue statements follow.

1. **Travel management and transportation—**How will transportation be managed to protect natural and cultural resources, to provide motorized and nonmotorized recreation opportunities, to reduce user conflicts, to enforce route designations and closures, and to improve public access?
2. **Recreational demand and uses—**How will recreation be managed to maintain and improve recreation sites and trails, especially in close proximity to communities, to reduce user conflicts, to protect natural and cultural resources, to provide a variety of recreational opportunities, and to maximize socioeconomic benefits?
3. **Lands and realty—**What opportunities exist to make adjustments to public land ownership that would result in greater management efficiency, in appropriate and agreeable levels of public access, and in increased public and natural resource benefits?
4. **Special designations—**Where are special designations appropriate to protect unique resources, and how should existing special designations be managed to protect the natural and cultural resources and maximize recreational opportunities and socioeconomic benefits?
5. **Urban interface—**How will BLM lands in urban interface areas be managed to provide desired benefits by the public and to be consistent with future land use plans in neighboring communities?
6. **Energy development—**Which areas should be open to energy development, particularly oil and gas leasing, and what restrictions should be employed to protect cultural and natural resources and minimize user conflicts?
7. **Range health/upland management—**How will the BLM manage livestock grazing on public lands while protecting, managing, restoring, and using natural and cultural resources?
8. **Vegetation—**What actions or restrictions will be needed to reduce dangerous fuel loading, to control and prevent the spread of noxious weeds and other undesirable plant species, and to maintain healthy forest ecosystems?

9. **Wildlife—**How will uses and land management activities be managed to maintain and improve terrestrial and aquatic habitats in a scattered land ownership pattern, while maintaining multiple-use land management?
10. **Water/riparian—**What measures will be implemented to protect water resources, especially riparian areas, from the effects of other uses?
11. **Sagebrush habitat and species—**How will sagebrush habitat be managed to reduce continued habitat loss and fragmentation?
12. **Cultural resources—**How can the BLM protect and conserve cultural resources, and where do interpretation opportunities exist?

The BLM will use the planning issues and associated statements, planning criteria, and other information collected in the early planning and scoping phases of the RMP process to help formulate a reasonable range of alternative management strategies that will be analyzed during the planning process.

CHAPTER 2
CURRENT MANAGEMENT

Chapter 2 describes the current management direction provided by the existing RMP and associated planning and NEPA documents (**Table 2-1**). Management direction from the RMP that is still valid will be carried forward in the Kremmling RMP as direction common to all alternatives. Those management directions/actions from the RMP that are valid but may need some modification in wording or intent will be incorporated into the alternatives of the Kremmling RMP.

Table 2-1
Relevant Plans and Amendments

Document Title	Year	Description
Kremmling RMP and Record of Decision (ROD)	1984	Current RMP for the KFO
Muddy Creek Reservoir EIS-Level Amendment	1991	Amendment for the Muddy Creek Reservoir
Oil and Gas EIS-Level Amendment	1991	Amendment for compliance with the Supplemental Planning Guidance for Fluid Minerals released in 1987
Standards for Public Land Health and Guidelines for Livestock Grazing Environmental Assessment (EA)-Level Amendment	1997	Amendment for adopting the standards and guidelines.
Upper Colorado River Special Recreation Management Area (SRMA) EA-Level Amendment	2000	Amendment for the SRMA.
Land Acquisition Land Use Priorities EA-Level Amendment	2000	Amendment to modify land acquisition land use priorities.
Wolford Mountain Travel Management Plan Activity-Level Plan	2005	Activity-level management plan for the Wolford Mountain Area.

This chapter is divided into four sections: resources, resource uses, special designations, and social and economic conditions. Each section contains the original RMP planned actions and maintenance or amendment actions that have taken place since 1984. Resources are those natural, biological, or cultural components that make up the KFO. Resource uses involve activities that use the natural, biological, or cultural components of the KFO, such as livestock grazing, recreation, and mineral development. Special Designations are those areas that contain a formal special designation, such as Areas of Critical Environmental Concern (ACECs). The current social and economic conditions are described is this section.

Each section is mirrored in Chapters 3 and 4 to assist in cross referencing current resource and resource use management with resource conditions and trends (Chapter 3) and management opportunities (Chapter 4). Collectively, these management actions represent current management of BLM-administered lands within the KFO and will form the basis of the No Action Alternative in the RMP/EIS. This management direction will continue into the future without additional RMP changes.

Plan Decision Guidance

The BLM Land Use Planning Handbook (Handbook 1601-1, Appendix C), available at the KFO and the BLM Web site (http://www.blm.gov/nhp/efoia/wo/handbook/h1601-1.pdf), provides specific and updated direction concerning land use plan decisions that need to be made during the revision process. The relevant decision guidance for each resource, resource use, and special designations are contained in **Appendix A**. The following is a summary of the types of decisions that are made in an RMP.

The RMP expresses desired outcomes or desired future conditions in terms of specific goals, standards, and objectives. These direct the BLM's actions most effectively in meeting legal mandates, such as those of the Endangered Species Act of 1973 (ESA), numerous regulatory responsibilities, national policy, including BLM Strategic Plan goals, State Director guidance (see 43 CFR 1610.0-4 [b]), and other resource or social needs.

The RMP identifies goals and objectives. Goals are generally broad statements of desired conditions, such as maintaining ecosystem health and productivity, promoting community stability, and ensuring sustainable development; they are often not quantifiable. Standards are descriptions of physical and biological conditions or the degree of function required for healthy lands and sustainable uses. Standards may address both site-specific and landscape or watershed-scale conditions. Objectives identify specific desired conditions for resources. Objectives establish desired time frames, as appropriate, for achievement and are developed using quantifiable measures whenever practical.

The RMP identifies appropriate uses, or allocations, that are allowable on BLM-managed lands. These allocations identify surface lands and subsurface mineral interests where uses are allowed, including any restrictions that may be needed to

meet goals, standards, and objectives. It also identifies lands where specific uses are excluded to protect resource values. Certain lands may be open or closed to specific uses based on legislative, regulatory, or policy requirements or on criteria to protect sensitive resource values. If land use plans close areas of 100,000 acres or greater in size to a particular use, Congress must be notified of the closure, as prescribed in 43 CFR 1610.6.

The RMP identifies management actions that would likely be needed to achieve desired outcomes of the plan. These actions may include proactive measures, such as those that could be taken to enhance watershed function and condition, or reasonable development scenarios for allowable uses, such as motorized trails, mineral development, recreation, timber harvest, utility corridors, and livestock grazing. These management actions provide a context for the land use plan's decisions, an analytical base for the NEPA analysis, and a basis for future budgeting and resource requests.

The RMP will establish administrative designations or recommendations for ACECs, Research Natural Areas (RNA), and National Natural Landmarks and, where appropriate, will include recommendations or make findings of suitability for congressional designations, such as Wild and Scenic River (WSR) status.

2.1 RESOURCES

2.1.1 Air Quality

A. Relevant Plans and Amendments

The existing RMP's only discussion of air resources is in the Affected Environment, Chapter 2, where there are climate and air quality sections. In discussing various alternatives, under other resources, there is the comment that "all air quality regulations would be adhered to", but no resource decisions regarding air resources are documented in the ROD.

The plan identifies two Class 1 airsheds within the Planning Area- Zirkels and Flat Tops. Although the Rawahs, Rocky Mountain National Park, and Eagles Nest are not within the planning area, they are along the boundary and should be included in the revision.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

The KFO is a National Weather Service cooperative weather observer, recording daily temperatures and precipitation at the Kremmling Office. In addition to the BLM, the airport, elementary school, and a CoCoRaHs observer record weather in the Kremmling area. Additional published weather observations are available for Gould, Grand Lake, Fraser, Rand, Hohnholz Ranch (Laramie River Valley), Green Mountain Reservoir, Walden, and the Williams Fork Reservoir from the National Weather Service. The National Resource Conservation Service maintains snow

measurement (SnoTel) sites in the surrounding mountain areas and the National Interagency Fire Coordination Center has a remote automated weather station north of Kremmling in the Gunsight Pass area and one in the central part of Jackson County (Willow Creek).

The BLM does not monitor air quality within the Kremmling planning area. The NPS does fairly extensive air quality and visibility monitoring in Rocky Mountain National Park and there is a regional air quality and haze study currently being conducted in the Mount Zirkel Wilderness. Reviewing Colorado and the US Environmental Protection Agency's (EPA) air quality reports, monitoring in the Summit County and Larimer County areas occurred near Breckenridge and Fort Collins respectively and does not represent air quality for public lands in these counties. There were no areas reporting for Grand or Jackson counties, and the Eagle County monitoring site is in Vail.

2.1.2 Geology

The 1984 RMP did not specifically address management objectives or management actions for geologic resources.

2.1.3 Soil Resources

Although the Kremmling RMP/Final EIS had a soil section in the Affected Environment (Chapter 2), the rest of the document combined soil issues into the water resources sections. Some management direction was outlined in the RMP/Final EIS, but was not carried forward to the ROD. An example of this is the elaboration of what types of actions were intensive and limited management, discussed in Chapter 3, page 70 of the RMP/Final EIS. The RMP's Preferred Alternative Map delineates "soil priority areas" to help guide management actions. These are areas "where soil erosion problems exist. Reducing soil loss is the priority for these lands." Within the RMP/EIS, these areas are not identified or discussed, and soil concerns are limited to sensitive watersheds.

The 1997 Colorado Standards for Public Land Health and Guidelines for Livestock Grazing Management RMP Amendment was approved to help determine what constitutes healthy public lands. The standards that follow were adopted into the KFO RMP and directly relate to the health of upland soils.

Standard 1 - Upland Soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor and minimizes surface runoff.

Indicators:

- Expression of rills, soil pedestals is minimal;
- Evidence of actively eroding gullies (incised channels) is minimal;
- Canopy and ground cover are appropriate;

- Litter accumulates in place and is not sorted by normal overland water flow;
- Organic matter in soil is appropriate;
- Plant species are diverse, with a variety of root depths;
- Upland swales have vegetation cover or density greater than that of adjacent uplands; and
- Plants are vigorous and desirable.

In 2001, Colorado Instruction Memorandum (IM) CO-2001-011 provided the following recreation management guidance for upland soils and riparian systems:

- Manage recreation to maintain sufficient vegetation on upland areas, to protect the soil from wind and water erosion, and to buffer temperature extremes;
- Minimize disturbances and manage recreation in riparian areas to protect vegetation, fragile soils, springs, and wetlands; and
- Plan and locate routes, trails, and developments away from riparian and wetland areas and highly erosive soils.

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives:

Kremmling RMP/ROD Updated 1999 (p. v, 3) (objective): To maintain streams … to protect and enhance groundwater and sensitive watersheds in association with actions initiated by other resource programs.

2005 Northwest Colorado Fire Plan (p. 220) (objective): Emergency rehabilitation plans will address all critical resources, such as cultural, air, water, and soil, threatened or endangered species, and specifically identify how these resources will be addressed in the rehabilitation of the area if appropriate. Reclamation and rehabilitation activities could begin before the end of suppression activities.

2005 Northwest Colorado Fire Plan (p. 220) (objective): In addition to rehabilitation, areas that have been burned will also be evaluated to determine if they need to be rested from activities including livestock grazing, recreation or ground disturbing activities to allow regeneration. Each area will be assessed on a case-by-case basis. The standard rest period for post-fire grazing management will be 2 growing seasons.

2005 Northwest Colorado Fire Plan (p. 221) (objective): Full suppression but, restrict heavy equipment use to slopes <40 percent. Limit, as much as possible, ground disturbance in sensitive soil types. No mechanized equipment within ACEC boundaries or the sensitive soil areas from Blue River east to Barger Gulch. These

constraints would be waived when mechanized equipment or use of retardant is necessary to assure fire fighter safety.

Management Actions:

Kremmling RMP/ROD Updated 1999 (p. v, 3) (action): Intensive management will be applied to substandard or unstable stream channels and sensitive watersheds, which constitute only 3 miles, or 2 percent pf the total stream miles in the KFO.

1991 O&G RMP Amendment/ROD (p. 21) (stipulation): CO-27, Controlled Surface Use (CSU): Before the surface disturbance on slopes of, or greater than, 40 percent, an engineering/reclamation plan must be approved by the Authorized Officer. Such plans must demonstrate how the following will be accomplished:

- Site productivity will be restored.
- Surface runoff will be adequately controlled.
- Off-site areas will be protected from accelerated erosion such as drilling, gullying, piping, and mass wasting.
- Surface-disturbing activities will not be conducted during extended wet periods.
- Construction will not be allowed when soils are frozen.

No specific exception criteria are currently identified.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Although the management objectives and planned actions to maintain or improve soil resources were not well documented in the RMP/ROD, during annual plan maintenance, the original soil priority areas and sensitive watersheds were identified from office files. The office then set management objectives that were consistent with the ROD, yet was more specific for soil priority areas and sensitive watersheds. The objectives are as follows:

- Coordinate with other resources to ensure potential land uses in soil priority areas are consistent with that designation;
- Prepare activity plan or provide input to other resource discipline activity plans for the soil priority areas of Junction Butte Area and Barger Gulch;
- Ensure intensive management programs proposed by other disciplines consider sensitive watershed values, including
    - Big Muddy Creek,
    - Lawson Ridge/Junction Butte,
    - Sulphur Gulch,
    - Barger Gulch,

  - Muller Creek (south of Granby),
  - King Creek (north of Parshall), and
  - North of the Colorado River, Windy Gap to Hot Sulphur Springs;
- Coordinate with other resources to ensure soil resources are considered and protected or mitigated in management actions.

The office has been implementing most of the actions to protect soil resources described in Chapter 3, page 70 of the Proposed RMP/Final EIS. These actions detailed what types of management would be considered intensive or limited management.

Intensive Management: On areas where: 20 percent or more of the watershed is in a moderate to severe erosion class (sensitive watershed); BLM lands are the source of pollution; and stream improvements would benefit fish and wildlife and noticeably improve water quality, management practices employed include improving vegetation cover on watersheds by developing grazing systems for livestock, which would increase plant density and stabilize the soil.

Restrictions would be imposed on other activities or uses of the public lands, including the following:

- Excluding surface-disturbing activities from sensitive watersheds where they were contributing to, or had the potential for contributing to, water quality degradation;
- Providing buffer strips between streams and surface-disturbing activities, such as mining, road building, and clear cutting;
- Ensuring rapid revegetation of disturbed areas;
- Limiting OHV use in sensitive watersheds;
- Controlling erosion or runoff on disturbed sites;
- Limiting vegetation manipulations or treatments in sensitive watersheds to spraying, aerial seeding, or designed grazing systems;
- Placing timing restrictions on surface-disturbing activities to avoid spring thaw and runoff seasons; and
- Constructing snow management structures for watershed improvement.

Limiting vegetation manipulations to nonground-disturbing activities in sensitive watersheds has not been adhered to, as prescribed burns of sagebrush stands, and brush beating or Dixie harrow and seeding has been used to improve ground cover. Treatment areas were site reviewed before and after treatment, and overall soil protection from the resulting scattered litter and new grass and forb communities was improved. Snow management structures have not been pursued to date, nor

have suitable areas been identified. Compliance monitoring and overall reclamation review of the numerous permitted activities is not consistently done in the KFO.

From 1994 to 1997, the KFO and Owl Mountain Partnership funded the University of Northern Colorado to study soil mycorrhizal populations in the North Park region. They compared grazed to ungrazed sites, long-term exclosures, and sites with chemical applications to reduce sagebrush. In addition to this work, various Master's degree candidates have collected data in North Park on cryptobiotic crusts and soil studies on BLM lands. These types of efforts should be continued to improve our data of long-term soil health and productivity.

The KFO has been doing land health assessments (LHAs) in conjunction with grazing permit renewals since 1998. During these field assessments, the soil conditions are evaluated, as are the standards for vegetation, riparian communities, and water quality. If any of the resource conditions are considered at risk or not meeting standards due to livestock grazing, then management actions to improve conditions are implemented before the next grazing season. There have been more instances where vegetation is considered to be not meeting the standard or to be at risk than areas failing the soil standard. Focusing on improving vegetation before soil concerns is a cost-effective action that results in better soil health than when soil health has already been affected.

In the RMP/ROD, Off-Road Vehicle Management Section (pp. 12 and 13), seven areas were restricted to existing or designated roads and trails. Roads were never designated except in the Dice Hill, Windy Gap, Hebron Slough, and Sulphur Gulch areas, and little compliance/enforcement was done. User-created roads in several areas have increased since the ROD. In January 2005, the Wolford Travel Management Plan Finding of No Significant Impact was signed. The plan set travel restrictions and vehicle designations for trails and extended the winter seasonal closure to most of the roads within the Muddy Creek sensitive watershed. Open motorized routes were reduced from 230.49 miles to 137 miles, plus approximately 30 miles restricted to administrative use only. As part of the monitoring plan for the travel management plan, the BLM is monitoring road width and condition on trails within key areas, including the Horse Gulch area, the play area, and the constructed Sidewinder Trail. There are considerable problems with plan implementation, as route compliance is difficult to enforce. Travel management is needed for the rest of the KFO and is to be completed as part of the planned RMP revision. Areas that had some restrictions from the first RMP (Dice Hill, North Sand Hills) have also had enforcement problems. Regular review of and enforcement in areas that are a greater distance from the KFO will be a challenge.

2.1.4 Water Resources

The 1984 RMP, along with other RMP amendments, included specific decision guidance for water resource management (see below).

The 1997 Colorado Standards for Public Land Health and Guidelines for Livestock Grazing Management RMP Amendment were approved to help determine what constitutes healthy public lands. The standards that follow were adopted into the KFO RMP and directly relate to the health of upland soils.

STANDARD 2 - **Riparian Systems** associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment and provides forage, habitat, and biodiversity. Water quality is improved or maintained, and stable soils store and release water slowly.

Indicators:

- Vegetation is dominated by an appropriate mix of native or desirable introduced species;
- Vigorous desirable plants are present;
- Vegetation is of diverse age class structure, appropriate vertical structure, and adequate composition, cover, and density;
- Streambank vegetation is composed of species and communities that have root systems capable of withstanding high streamflows;
- Plant species indicate maintenance of riparian moisture characteristics;
- Stream is in balance with the water and sediment being supplied by the watershed (e.g., no headcutting, no excessive erosion or deposition);
- Vegetation and free water indicate high water tables;
- Vegetation colonizes point bars with a range of age classes and successional stages;
- An active floodplain is present;
- Residual floodplain vegetation is available to capture and retain sediment and dissipate flood energies;
- Stream channels are of the size and meander pattern appropriate for the stream's position in the landscape, and parent materials; and
- Woody debris contributes to the character of the stream channel morphology.

STANDARD 5 - The **Water Quality** of all water bodies, including groundwater where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface water and groundwater include the designated beneficial uses,

numeric criteria, narrative criteria, and antidegradation requirements set forth under state law in 5 Colorado Code of Regulations (CCR) 1002-8, as required by Section 303(c) of the Clean Water Act.

Indicators:

- Appropriate populations of macroinvertebrates, vertebrates, and algae are present.
- Surface water and groundwater contain substances attributable only to humans within the amounts, concentrations, or combinations as directed by the Water Quality Standards established by the State of Colorado (5 CCR 1002-8). Examples of these substances are sediment, scum, floating debris, odor, and heavy metal precipitates on channel substrate.

In its Riparian-Wetland Initiative for the 1990s (BLM/WO/GI-91/001+4340) the BLM outlined a national strategy to manage and restore riparian-wetland areas on public lands. The BLM set nationwide riparian-wetland goals, one of which was to restore and maintain riparian-wetland areas so that 75 percent or more would be in proper functioning condition (PFC) by 1997. The overall objective of this goal was to achieve an advanced ecological status, except where resource management objectives, including PFC, would require an earlier successional stage, thus providing the widest variety of vegetation and habitat diversity for wildlife, fish, and watershed protection. The initiative also set other goals, as follows:

- Protection through proper management, avoiding or mitigating negative impacts;
- Acquiring or expanding key areas to maximize public benefit, protection, enhancement, and efficient management;
- Ensuring an aggressive riparian-wetland information/outreach program, including providing training and research; and
- Improving partnerships and cooperative restoration and management processes in implementing the initiative.

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives:

Kremmling RMP/ROD Updated 1999 (p. v, 3) (objective): Intensive management will be applied to substandard or unstable stream channels…, which constitute only 3 miles, or 2 percent, of the total stream miles in the KFO.

Kremmling RMP/ROD Updated 1999 (p. 4, a) (objective): To maintain streams on public lands which meet state water quality standards and gave *(sic)* acceptable channel stability. To protect and enhance groundwater and sensitive watersheds in association with actions initiated by other resource programs.

Kremmling RMP/ROD (p. 8, 5a) (objective): Emphasis will be placed on intensively managing critical and important wildlife habitats including…3 miles of riparian, 3,000 acres of wetlands and 53 miles of stream.

2005 Northwest Colorado Fire Plan (Suppression Constraint #4, p. B-90 and KB-4 Troublesome Wilderness Study Area and Platte River Wilderness Study Area Polygon, B-93) (objective): Use of heavy equipment and chemical retardant in any wet areas including ponds, springs, seeps, which occur in the lodgepole vegetative type would be avoided.

2005 Northwest Colorado Fire Plan (KB-3 Pinyon/Juniper Polygon. Suppression Constraint #1, p. B-93) (objective): Avoid removal of large spruce, fir or cottonwood trees along the Colorado River during suppression activities unless identified as a safety hazard.

Management Actions:

Kremmling RMP/ROD Updated 1999 (p. 4, b) (action): All streams on public lands in the KFO planning area which meet or exceed state water quality standards and have acceptable channel stability will be maintained in their present condition through limited management. Streams not meeting state standards or having unstable channels will be improved to meet minimum standards through intensive management.

Kremmling RMP/ROD Updated 1999 (p. 4, b) (action): Groundwater will be protected to maintain its present good quality.

Kremmling RMP/ROD Updated 1999 (p. 4, b) (action): Sensitive watersheds will be protected by placing restrictions on activities that could adversely affect them. Intensive management practices will be applied to sensitive watersheds to improve them through practices initiated by other resource programs, such as ranch or forest management.

1991 Oil and Gas RMP Amendment/ROD (p. 21) (stipulation): CO-28, Colorado Natural Heritage Program (CNHP): For the protection of perennial water impoundments and streams, and/or riparian/wetland vegetation zones, activities associated with oil and gas exploration and development including roads, transmission lines, storage facilities, are restricted to an area beyond the riparian vegetation zone. Exceptions: This stipulation may be excepted subject to an on-site impact analysis with consideration given to degree of slope, soils, importance to the amount and type of wildlife and fish use, water quality, and other related resource values. This stipulation will not be applied where the Authorized Officer determines that relocation up to 200 meters can be applied to protect the riparian system during well siting.

2005 Northwest Colorado Fire Plan (Strategies for all wildland fires, p. 15): Aerial retardants and foams will not be used within 300 feet of any waterway as described in the Guidelines for Aerial Delivery of Retardant or Foam near Waterways.

2005 Northwest Colorado Fire Plan (General Vegetation Treatment Guidelines, p. 71): Except where specific treatments are designed to control or manage vegetation within riparian areas, treatments will be designed to avoid riparian areas. Adequate buffer strips around watercourses and drainages may be necessary to protect riparian areas. The extent of the buffer strip depends on a number of factors such as: the slope, the type of treatment, acres treated, current vegetation condition, etc., and will be determined through a site-specific environmental analysis.

Vegetation treatments conducted on uplands adjacent to riparian areas will be designed and conducted in a manner that limits potential for soil erosion and sedimentation and increases vegetative ground cover. This includes riparian restoration work, and salt cedar removal, intended to improve habitats. Where erosion potential is high, establish baseline water quality data before conducting vegetation treatments and conduct water quality studies until the site is re-vegetated and soils are stabilized to determine impacts of vegetation treatments on water quality.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Annual plan maintenance was used to better document some of the management objectives and planned actions to maintain or improve water resources that were briefly described in the RMP/ROD. These implementation procedures are consistent with the ROD and provide more specific direction. Procedures to implement are as follows:

- Establish stream monitoring stations to detect degradation in water quality and channel stability. The stations will be established on streams meeting water quality standards that have high resource values and land activity and that are representative of a larger area. The streams are to be sampled twice a year;
- Analyze the feasibility to meet Colorado state standards. Prepare an activity plan or provide input to other resource activity plans for streams not meeting state standards and streams requiring intensive management;
- Monitor streams not meeting state standards four times a year; and
- Monitor proposed land uses to ensure groundwater considerations are recognized in all management actions.

Water Quality: Since 1983, the KFO has been doing some water quality monitoring on selected streams that meet and those that do not meet state water quality standards (**Table 2-2**). Depending on the level of funding, sampling has ranged from

Table 2-2
Streams the BLM Has Monitored

Stream	General Area	5th Order Watershed	Period of Record	Data Available
Streams that meet water quality standards				
Antelope Creek	Middle Park	1401000114-Muddy Creek	1982-1984, 1988-1993, 2001-2005	Flows, field parameters, cations/anions, sediments
Corral Creek	Middle Park	1401000112-Colo. River above Kremmling	1982, 2000-2006	Flows, field parameters, cations/anions
Cow Gulch	Middle Park	1401000114-Muddy Creek	1982-1984, 1987-1989, 1991-1995, 2000-2005	Flows, field parameters, cations/anions, sediments
Kinney Creek	Middle Park	1401000108-Colo. River from Fraser confluence to Williams Fork	1982, 1988-1993, 2001-2005	Flows, field parameters, cations/anions, sediments
Reeder Creek	Middle Park	1401000112-Colo. River above Kremmling	1982, 1989-1995, 2002-2006	Flows, field parameters, cations/anions
Spring Creek	North Park	1018000102-Illinois River	1982, 1987-1990, 1995, 2001	Flows, field parameters, sediments
Sulphur Gulch	Middle Park	1401000112-Colo. River above Kremmling	1988-1993	Flows, field parameters, sediments
Wheeler Creek	North Park	1018000203- Big Creek/Beaver Creek	1989-1993	Flows, field parameters, sediments
Monitored streams that have water quality or channel stability concerns				
Deer Creek	Middle Park	1401000114-Muddy Creek	1982, 1991-1993, 2000, 2003-2005	Flows, field parameters, sediments, cations/anions
Government Creek	North Park	1018000104-Canadian River	1982-1983, 1988-1993, 2000-2001 2004	Flows, field parameters, sediments, cations/anions,
Grizzly Creek	North Park	1018000101-Grizzly Creek	1982-1983, 1985, 1987-1992, 1995, 2001-2004	Flows, field parameters, sediments, cation/anions,
Pinto Creek	Middle Park	1401000114-Muddy Creek	1988-1993, 2000, 2003-2005	Flows, field parameters, sediments, cation/anions
Red Dirt Creek	Middle Park	1401000114-Muddy Creek	1991-1993	Flows, field parameters, sediments (discontinued due to inundation by reservoir)
Stink Creek	Laramie River Valley	1018001004-Muddy Creek	1988, 1990	Flows, field parameters, cations/anions, sediments

none to eight times per year and may consist of a discharge measurement, field parameters (such as electrical conductivity, pH, temperature), and a lab analysis of total dissolved sediment and common cations/anions.

In 1995, the BLM participated in a water quality sampling effort for the Owl Mountain Partnership in North Park. The partners sampled water quality (pH, temperature, dissolved solids, and electrical conductivity) at several stations in the southeastern portion of North Park. The stations were all sampled spring, summer, and fall on the same day to help characterize water quality in the area.

In 2003, the Grand County Water Information Network was formed to work collaboratively with 39 entities to coordinate and manage water quality monitoring efforts for a better understanding of water quality concerns and issues in Grand County. The Grand County Water Information Network has created a shared database of past and present water quality data for the county and helps coordinate sampling locations and parameters to address specific watershed concerns. The BLM participates in the network.

Groundwater: Groundwater issues have primarily been water development and source protection. Since the RMP, spring development for water sources has included a larger exclosure around the groundwater source and recharging the source area when not in use. Several livestock wells have been drilled to improve overall watershed and, in particular, riparian conditions. These wells have provided more reliable water than ephemeral ponds and increased grazing management options. Protective groundwater actions have included requiring liners on oil and gas pits that are located in permeable soils. The BLM did a groundwater site investigation on the Old Granby Landfill to identify groundwater contamination and in the fall of 2006 asked the US EPA to take no further remedial action; this decision is still pending. There is still a need to gather information on groundwater sources within the KFO that goes beyond the traditional spring location and flow inventories, including identifying recharge areas and sensitive species' habitat. Due to energy development in the North Park area, the Jackson County area would be the highest priority for the KFO.

Riparian/Wetland: During the late 1980s, the BLM increased its focus on riparian management. The KFO reprioritized its allotments from the RMP listing (ROD, Appendix 1, pp. 41-51) to focus on allotments that needed riparian improvement. The riparian program became a separate resource program that was coordinated by the surface water program. The interdisciplinary program sets yearly goals for inventory, monitoring, and resource protection/improvement. In 1992-1993, the KFO made a major effort to update the riparian information on all perennial and major intermittent riparian areas within the KFO. A "level 2" inventory was done that included pictures, the channel's physical characteristics, vegetative communities and utilization/condition. In later years, the PFC worksheet was also included in the data collected. To help monitor changes, channel cross-sections have been established on some streams, in addition to PFC assessments and photographs.

These are less expensive than water quality analyses yet can also help identify concerns. The KFO worked with The Nature Conservancy in 1993 to gain additional inventory information for Middle Park streams.

In 2002, the KFO contracted out a wetland inventory in the North Park area (Johnson and Gerhardt 2003) and focused on the fens/mire located on public lands, inventorying seventeen sites. In 2003, four of the inventoried areas were studied to represent the major types of North Park mires and to give a detailed ecological evaluation of each (Johnson and Gerhardt 2005). Grazing management has been changed on at least three of the complexes as a result of the study. In 2005-2006, the BLM contracted with the CNHP to conduct additional wetland inventories in Grand and Jackson Counties (Jones and Culver 2006). The Heritage Program's "nonfunctional" springs are not included in the BLM's summary table, as they are incorrect. Most appear to be an inventoried area that ended up being an upland area, which is not nonfunctional; the rest require a BLM field check.

During Rangeland Health Assessments, the Interdisciplinary Team revisits all riparian and known wetlands within the grazing allotment to assess condition. A PFC rating is done and photographs are taken. Changes in grazing permits, construction of protective fences, willow planting, and drop structures have been done to improve or protect riparian/wetland areas. In addition to this, field checks of a portion of riparian and wetland areas are done each year to help monitor trend and compliance and to update condition information. **Table 2-3** contains areas that are field checked annually to monitor conditions.

Table 2-3
Riparian/Wetland Monitoring in the KFO

Riparian/Wetland	General Area	Watershed	Condition*	Data
Antelope Creek	Middle Park	1401000114-Muddy Creek	FAR-PFC	Photo points, well points
Cow Gulch	Middle Park	1401000114-Muddy Creek	FAR-PFC	Photo points, cross sections
Deer Creek	Middle Park	1401000114-Muddy Creek	FAR-PFC	Photographs
Government Creek	North Park	1018000104-Canadian River	FAR-PFC	Cross sections, photographs
Grizzly Creek	North Park	1018000101-Grizzly Creek	PFC	Cross Sections, photographs
Mansfield Draw	North Park	1018000107-North Platte above 3 Way	PFC	Photographs
Mule Creek	Middle Park	1401000110-Williams Fork	FAR-PFC	Cross Sections, photographs
Sheep Mountain Fen	North Park	1018000106- Lake Creek/North Fork of the North Platte	PFC	Photographs

Table 2-3
Riparian/Wetland Monitoring in the KFO

Riparian/Wetland	General Area	Watershed	Condition*	Data
Soap Creek	North Park	1018000101-Grizzly Creek	NF-PFC	Photo points, Cross Sections
Sudduth, Bush Draws	North Park	1018000104-Canadian River	FAR	Photo points
Troutman Draw	North Park	1018000203-Big Creek/Beaver Creek	PFC	Photographs

*PFC = proper functioning condition; FAR = functioning at risk; NF = nonfunctional

Water Rights: The BLM has been filing for water rights for its water developments within the KFO, generally concurrent with construction. State well permits are obtained before drilling livestock wells, and many also have absolute water rights. In the Interlocutory Decree of 1972, many of the springs, wells, and perennial streams were granted reserved water rights. Although these rights are relatively senior, they were of limited beneficial uses (for example, some were for livestock only, others were for firefighting and recreation), and on the streams, they were for very small amounts of 0.001-0.002 cubic feet per second (cfs). The decree was finalized in 1990 for springs and for stream segments in the Laramie River Valley. The BLM still needs to work with the courts to obtain a final decree on wells, reservoirs, pipelines, and other stream segments in the rest of the KFO planning area.

Most of the perennial streams that support a fishery have an instream flow filing held by the Colorado Water Conservation Board. These rights are junior to most diversions, but do offer some flow protection to public streams as many headgates occur downstream of the public lands. The BLM has been collecting field data on North Park and Grand County streams to recommend additional instream flows on public stream segments. The BLM may not hold an instream flow right under Colorado water law, so the rights are held by the Conservation Board. Instream flows are sought only for streams that support (or have the potential to support) a fishery, so smaller perennial streams are not protected by instream flow filings. If the Conservation Board approves the instream flow recommendations, then they file in water court for a right. The date of the final decree determines the priority date of the water right.

In 2005, the Colorado Legislature (HB 1177) passed the Interbasin Compact Committee, forming nine water basin roundtables to address Colorado's water for the twenty-first century. The BLM, as a nonvoting member, is involved in both the North Platte and the Colorado River roundtables to help the basins address nonconsumptive flows and consumptive water uses needed in each basin to support water quality, channel stability, riparian values, recreation, and fisheries.

2.1.5 Vegetative Communities

A. Relevant plans and amendments

The Kremmling RMP contained no specific guidance for vegetation communities aside from indirect guidance regarding forage for livestock and wildlife and forest management. Please refer to Section 2.2.5 for information on management of the forest vegetation types.

The 1997 Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado RMP Amendment was approved to help determine what constitutes healthy public lands. The following standards were adopted into the KFO RMP and directly relate to the health of plant communities:

Standard 2 - Riparian Systems: Riparian systems associated with both running and standing water function properly and have the ability to recover from major surface disturbances, such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment and provides forage, habitat, and biodiversity. Water quality is improved or maintained. Stable soils store and release water slowly.

Standard 3 - Plant and Animal Communities: Healthy productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations and ecological processes.

B. Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Management of vegetation communities includes managing livestock grazing by implementing rest rotation and deferred rotation grazing systems. These grazing systems are implemented where improvements are needed in range condition and are used as appropriate actions to meet the Standards for Public Land Health in Colorado. The grazing systems are designed to rest livestock grazing pastures at least once every three to four years. Grazing systems are also designed to change the time of grazing from year to year so the vegetation is not grazed during the same growth stage every year. Changing the season of use and implementing rest for the vegetation has proven to be advantageous for the vegetation and allows the vegetation to be vigorous and healthy and should result in an improvement in the range condition. Healthy vegetation is more capable of withstanding stress, such as drought, than vegetation that is in poor condition.

Range improvement projects are designed and installed to improve the condition of the vegetation through sagebrush control treatments and water projects to improve the distribution of the livestock. Range improvements, although designed for improving livestock grazing or wildlife habitat, have the additional benefits of helping other species in the area.

The management objectives for the vegetation within KFO are to improve the overall condition of the vegetation through improved grazing management, vegetation treatments for improving greater sage-grouse habitat, and to increase the forage base for livestock and wildlife. Special attention would be paid to those management techniques that would increase critical winter habitat for big game, would enhance the number and quality of special status plant species, and would provide the proper conditions so the populations of special status plant species in the KFO can increase in number and quality.

One objective of vegetation management is to achieve a mix of vegetation types and a variety of age classes. An increase in the variety of vegetation types and age classes increases the ability of the vegetation to withstand disturbances. More specific wildlife habitat criteria would be met, increasing the variety and health of wildlife found within the KFO.

Range Monitoring Program:

The primary goal of the range monitoring program is to measure the progress toward achieving allotment objectives through the use of the following indicators:

- The combination of actual use and utilization studies;
- Long- and short-term trend studies, including photo trend;
- Rangeland health indicators to determine where additional monitoring needs to be applied;
- Long term climatic data, primarily but not limited to precipitation data; and
- Compliance checks to ensure adherence to annual grazing authorizations combined with use supervision allotment visitations to determine the current condition of the allotment.

Specific monitoring formats, such as Quadrat Frequency and Daubenmire studies for trend and Key Species Method for utilization have been used for trend studies. Other studies, such as Ocular Estimate and Apparent Trend, were mentioned specifically for Category C allotments, but these allotments have been monitored infrequently due to low priority. Category C allotments have been identified for a rapid assessment analysis for future range health assessments and permit renewal after FY 2009.

Supplemental monitoring studies provided through interagency technical references using the best available science are also used to identify progress toward meeting allotment management objectives.

Range monitoring resources are applied by the ecologist, as requested, to other field office programs, such as wildlife, riparian, threatened and endangered species, travel management, reclamation, and fuels reduction/treatment, to meet their management objectives using the best available science. Vegetation is monitored when specifically

requested by these disciplines or if tied directly to range management. Range monitoring resources and consultation through the ecologist position are also applied to partnerships, such as the Owl Mountain Partnership, Habitat Partnership Program, and Sage-grouse Working Groups, as requested or if management priorities require.

Three levels of range management were identified in the 1984 RMP/EIS and monitoring has been specifically tied to these three levels. Objectives and monitoring by management level are detailed below.

Management Level M (maintain or improve forage production in grazing allotments that are currently in satisfactory condition):

- Collection of actual use, utilization, trend, and climatic data. Trend is collected on allotments as grazing plans or objectives are developed. Baseline and post baseline trend is performed when allowed by current priorities, funding, or lack of personnel/time constraints.
- Compliance checks are performed to ensure adherence to grazing authorization.

Management Level I (improve the forage production and condition in grazing allotments that are in unsatisfactory condition. Improve this condition to meet Level I standards):

- Collect actual use, utilization, and climatic data;
- Collect trend data as grazing plans are developed. Post baseline trend monitoring would continue as funding, personnel, and time allow; and
- Although compliance monitoring was not identified for this level, allotments are monitored for compliance when determined advantageous or necessary to augment management decisions.

Management Level C (maintain the existing allotment situation and provide for management opportunities as needs arise for operators and other land use agencies). Periodic compliance checks to ensure that annual grazing authorizations are adhered to as necessary but only when there is no time, funding, or personnel constraints or when management priorities allow. These compliance checks are currently and primarily being performed annually and only for M and I category allotments, due to Management Information System (MIS) obligations and management priorities or needs.

Annual range utilization and trend studies are tied to the September 1984 RMP and March 1991 ROD and 10-year monitoring schedule but are subject to revision from year to year due to range management priorities, funding, and time or personnel constraints. Utilization studies are based on the "key area" concept, and study sites within these key areas are selected by the range staff familiar with the allotment and

the livestock operation. Allotments are stratified based on estimated forage and topographical features to obtain "weighted utilization," which is used in management decisions, such as setting stocking rates. Utilization studies, combined with actual use studies, have been used to determine proper stocking rates over five years of data collection on specific allotments by management level mentioned in the RMP and Grazing Monitoring Plan of September 1984 and Update of March 1991.

The original range monitoring plan called for two levels of priority, the first for the five-year monitoring period following the completion of the RMP and the second to begin after the stocking rates were set and grazing plans were being developed. The first level has been completed, and the revised plan addressed the second level of monitoring priority. A priority group of eight prioritization factors for monitoring was developed. The priority within each group was set based on the Range Program Summary Third Update. These priorities for monitoring have essentially been abandoned over time as management priorities changed. These new priorities include the Silver Spur Grazing Plan in cooperation with the Owl Mountain Partnership, partnerships with other agencies and cooperators, and the development of numerous range improvement projects became the primary priority in the resource area. Currently, the rangeland management specialists set the annual monitoring priorities based on management needs as determined by utilization/actual use studies, grazing concerns based on compliance/ use supervision monitoring, grazing plans, and range health assessments.

Range monitoring targets in MIS currently consist of monitoring 25 allotments in any combination of trend and utilization studies or actual use studies. MIS targets for compliance visits are currently set at 30, although there is flexibility built into MIS to change these figures from year to year.

The monitoring plan as outlined in the RMP may be subject to constraints when the following occurs:

- Studies are subject to manpower, time, and funding constraints. Although not included in the RMP, the monitoring plan is also subject to changes in direction of management priorities;
- Intensity of public controversy or resource conflicts is considered. The more public controversy and resource conflicts are involved, the more attention is given; and
- Specific components are monitored where they have the most importance to the management concept for each allotment.

2.1.6 Fish and Wildlife Habitat

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling RMP/ROD (p. 7, 5a) (objective): Manage public land habitat to support optimum wildlife population levels as determined by the Colorado Department of Natural Resources, Division of Wildlife (CDOW) Strategic Plan commensurate with public land health standards and other allocations. Emphasis will be placed on intensively managing critical and important wildlife habitats including 326,000 acres of upland, 3 miles of riparian, 3,000 acres of wetlands and 53 miles of stream.

1997 Standards for Public Land health and Guidelines for Livestock Grazing RMP Amendment (p. 16) (objective): Modified the first sentence of the wildlife habitat management objective to read, "Manage public land habitat to support optimum wildlife population levels as determined by the CDOW's Strategic Plan, commensurate with public land health standards and other allocations." Rationale: This objective is modified to assure consistency with the standards.

Allowable Uses

Kremmling RMP/ROD (p. 7, 5b, 2) (allocation), forage allocation: Range forage will be allocated to optimize big game populations and livestock production at levels consistent with the CDOW's strategic plan. In grazing allotments where optimizing for both big game and livestock is not possible, livestock production will be favored, while providing sufficient forage to support 1980 big game population levels.

Management Actions

Kremmling RMP/ROD (p. 7, 5b, 1) (action) HMPs: Two HMPs have been written and are being implemented, the North Park HMP and the Upper Colorado River. A priority for the wildlife program is to write and implement a third HMP addressing public land wildlife habitat in Middle Park. The HMPs' list priority wildlife species and projects designed to improve habitat for these species. HMPs were not a BLM priority for a few years, so the third HMP has yet to be written.

Kremmling RMP/ROD (p. 7, 5b, 3) (action) Coordination with other BLM resources and other agencies: Activities initiated by other BLM programs will be coordinated to insure consideration of wildlife habitat values in these actions. These programs include forestry, range, lands/realty, mineral development, fire, recreation and soil, air, and water. The KFO wildlife program will also be coordinated with the CDOW and USFWS to assure maximum utilization of mutual resources. Cooperative agreements with the CDOW will be used when necessary to jointly manage state and public lands with similar wildlife habitat values and management objectives.

1991 O&G RMP Amendment/ROD (p. 11) (stipulation): No Surface Occupancy (NSO) stipulations will be used to protect some coal mines; grouse, raptor, bald

eagle, peregrine falcon, waterfowl and shorebird nests; special status plant species; North Park Phacelia ACEC, grouse leks; nesting sites for raptors, bald eagles, peregrine falcons, owls, waterfowl and shorebirds habitats.

1991 O&G RMP Amendment/ROD (p. 11) (stipulation): Timing Limitations stipulations will be used to protect crucial big game winter habitat, big game birthing areas, grouse winter habitat and nesting habitat for greater sandhill cranes, white pelicans, raptors, bald eagles, and peregrine.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Management objective: Improve those rangelands that are key wildlife habitats and have the potential for increased forage production for wildlife grazing by improving soil and water resources. Maintain those rangelands that are at their desired plant communities.

Wildlife habitat conditions are continuously monitored depending on funding and manpower limitations. The following techniques are used to monitor and improve habitat conditions:

- Vegetative measurements are conducted to monitor forage and habitat conditions for big game;
- Raptor nesting habitat is monitored annually to determine status and condition;
- Waterfowl brood counts are conducted annually in high production areas for Hebron (North Park) and Junction Butte (Middle Park);
- Aquatic habitats with populations of cold water fish are monitored annually in cooperation with the CDOW. Aquatic habitats with producing populations of trout are emphasized;
- Wildlife habitat improvements occur annually (depending on funds) by way of aerial fertilization, brush mowing, water developments, protective fencing, road reclamation, seeding, Lawson aerator, and chemical spraying. Several projects are in cooperation with the CDOW and the CDOW Habitat Partnership Program; and
- 1,100 acres of wetlands are monitored annually.

2.1.7 Special Status Species

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling RMP/ROD (p. 7, 5a) (objective): All threatened and endangered plant and wildlife habitats will be protected as required by law and regulation.

Management Actions

Kremmling RMP/ROD (p. 8, 5b, 4) (action) *Phacelia formosula* RNA: *Phacelia formosula* is found in North Park, an endangered plant species site. The site is designated as an RNA and is maintained for scientific study and education.

Kremmling RMP/ROD (p. 8, 5b, 5) (action): Monitor wintering bald eagle population levels and winter habitat conditions in Middle Park and the Upper Colorado River areas.

1991 Oil and Gas RMP Amendment/ROD (p. 11) (stipulation): NSO stipulations will be used to protect some coal mines; grouse, raptor, bald eagle, peregrine falcon, waterfowl and shorebird nests; special status plant species; North Park Phacelia ACEC, grouse leks; nesting sites for raptors, bald eagles, peregrine falcons, owls, waterfowl and shorebirds habitats.

1991 Oil and Gas RMP Amendment/ROD (p. 11) (stipulation): Timing limitations stipulations will be used to protect crucial big game winter habitat, big game birthing areas, grouse winter habitat and nesting habitat for greater sandhill cranes, white pelicans, raptors, bald eagles, and peregrine.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Management Objective: Protect, conserve, and manage Colorado BLM sensitive plant species and locations with adjacent critical sites that affect their habitat. If any threatened, endangered, or candidate plant species is identified on BLM-administered lands within the RMP planning area, it would be protected through NSO stipulations and any other actions needed to prevent its deterioration and allow its recovery.

Special status species habitat conditions are continuously monitored depending on funding and manpower limitations. The following techniques are used to monitor habitat conditions:

- Vegetative measurements are conducted to monitor forage and habitat conditions for sage-grouse;
- Bald eagle winter and nesting habitat in the Colorado River drainage is monitored annually to measure conditions and to determine population levels;

- Raptor nesting habitat is monitored annually to determine status and condition;
- Sage-grouse lek count data is coordinated annually with the CDOW;
- Aquatic habitats with populations of cold water fish is monitored annually in cooperation with the CDOW. Aquatic habitats with producing populations of Colorado cutthroat trout will be emphasized;
- Sage-grouse habitat improvements occur annually (depending on funds) by way of aerial fertilization, brush mowing, water developments, protective fencing, road reclamation, seeding, Lawson aerator, and chemical spraying. Several projects are in cooperation with the CDOW and its Habitat Partnership Program; and
- Wetland and riparian areas are surveyed annually for the presence of northern leopard frog, boreal toad, and sensitive plant species.

2.1.8 Wildland Fire Ecology and Management

The 1984 Kremmling RMP did not contain any decisions/guidance on wildland fire ecology or management. In 2001, the KFO Fire Management Plan (FMP) was completed. This document tiers from the Federal Wildland Fire Management Policy (FWFMP) and Program Review (December 1995 and 2001) and the Wildland and Prescribed Fire Management Policy (August 1998).

This section summarizes the following BLM management guidance and policies concerning fire:

- 2001 Federal Wildland Fire Management Policy;
- 10-year Comprehensive Strategy;
- Wilderness Act of 1964;
- 2001 Kremmling Fire Management Plan; and
- 2006 Northwest Colorado Fire Management Plan.

A. Relevant Plans and Amendments

2001 Federal Wildland Fire Management Policy: The 1995 FWFMP was the first comprehensive statement of wildland fire policy coordinated between the Departments of the Interior and Agriculture. The policy provided clear direction on important issues of safety, the role of fire in natural resource management, and the relative roles of federal and nonfederal agencies in the WUI.

The 2001 Review and Update of the 1995 FWFMP consisted of findings, guiding principles, policy statements, and implementation actions and resulted in the 2001 FWFMP. This replaces the 1995 FWFMP.

The 2001 FWFMP directs federal agencies to achieve a balance between suppression to protect life, property, and resources and fire use to regulate fuels and ensure ecosystem sustainability. The policy provides guidance related to fire management and fire management planning, as detailed below.

Safety. Firefighter and public safety is the first priority. All FMPs and activities must reflect this commitment.

Fire management and ecosystem sustainability. The full range of fire management activities will be used to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social components.

Response to wildland fire. Fire, as a critical natural process, will be integrated into land and RMPs and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of the fire. The circumstances under which a fire occurs, the likely consequences on firefighter and public safety, the welfare of natural and cultural resources, ecosystem sustainability, and the values to be protected dictate the appropriate management response to the wildland fire.

Use of wildland fire. Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. Use of fire will be based on approved FMPs and will follow specific prescriptions contained in operational plans.

Rehabilitation and restoration. Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure.

Protection priorities. The protection of human life is the single overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected.

Wildland-Urban Interface. The operational roles of federal agencies as partners in the WUI are wildland firefighting, hazardous fuels reduction, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility of tribal, state, or local governments. Federal agencies may assist with exterior structural protection activities under formal fire protection agreements that specify the mutual responsibilities of the partners, including funding. Some federal agencies have full structural protection authority for their facilities on lands they administer and may also enter into formal agreements to assist state and local governments with full structural protection.

Planning. Every area with burnable vegetation must have an approved FMP. FMPs are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved land management plan. FMPs must provide for firefighter and public safety, must include fire management strategies, tactics, and alternatives, must address values to be protected and public health issues, and must be consistent with resource management objective, activities of the area, and environmental laws and regulations.

Science. FMPs and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors. Information needed to support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in developing land management plans, FMPs, and implementation plans.

Preparedness. Agencies will ensure their capability to provide safe, cost-effective fire management programs in support of land and RMPs through appropriate planning, staffing, training, equipment, and management oversight.

Suppression. Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.

Prevention. Agencies will work together with local partners and other affected groups and individuals to prevent unauthorized ignition of wildland fires.

Standardization. Agencies will use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, value-to-be-protected methodologies, and public education programs for all fire management activities.

Interagency cooperation and coordination. Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.

Communication and education. Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs. These programs will be continuously improved through the timely and effective exchange of information among all affected agencies and organizations.

Agency administrators and employee roles. Agency administrators will ensure that their employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands.

Employees with operational, administrative, or other skills will support the wildland fire program as necessary. Agency administrators are responsible for and will be held accountable for making employees available.

Evaluation. Agencies will develop and implement a systematic method of evaluation to determine effectiveness of projects through implementation of the 2001 Federal Fire Policy. The evaluation will assure accountability, will facilitate resolution of areas of conflict, and will identify resource shortages and agency priorities.

The 10-Year Comprehensive Strategy: This reflects the views of a broad cross-section of governmental and nongovernmental stakeholders. It 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 range lands in the US. This strategy emphasizes measures to reduce the risk to communities and the environment and provides an effective framework for collaboration to accomplish this.

A set of core principles was developed to guide the identification of goals for this strategy. These principles include such concepts as collaboration, priority setting, and accountability.

An open, collaborative process among multiple levels of government and a range of interests will characterize the fulfillment of this strategy. The end results sought by all stakeholders are healthier watersheds, enhanced community protection, and diminished risk and consequences of severe wildland fires. The primary goals of the 10-Year Comprehensive Strategy are:

- Improve prevention and suppression;
- Reduce hazardous fuels;
- Restore fire adapted ecosystems; and
- Promote community assistance.

Successful implementation of the Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment - 10-Year Comprehensive Strategy (http://www.fireplan.gov/reports/7-19-en.pdf) requires a collaborative process among multiple levels of government and a range of interests resulting in healthier watersheds, enhanced community protection, and diminished risk and consequences of severe wildland fires.

The following core principles are overarching for all fire planning area goals:

- **Collaboration.** Facilitate a collaborative approach at the local, regional, and national levels.

- **Priority Setting.** Emphasize the protection of communities, municipal, and other high-priority watersheds at risk. Long-term emphasis is to maintain and restore fire prone ecosystems at a landscape scale.
- **Accountability.** Establish uniform and cost-effective measures, standards, reporting processes, and budget information in implementation plans that will fold into the Government Performance and Results Act process.

The Wilderness Act of 1964: The Wilderness Act provisions apply to all fire management activities undertaken on wilderness lands. The Wilderness Act states that "... measures may be taken as may be necessary in the control of fire...." The act also generally prohibits motorized equipment or mechanized transport in designated wilderness areas; however, it allows them "as necessary to meet minimum requirements for the administration for the area for the purposes of this act."

Fire and fuels management actions will meet the wilderness nonimpairment mandate for Wilderness Areas. In wilderness study areas (WSAs) fire and fuels managers will strive to avoid unnecessary impairment that would affect the suitability toward wilderness designation of these areas. The ultimate goal would be to return fire to its natural role in these ecosystems.

2001 Kremmling Fire Management Plan: The KFO FMP was developed as a result of the above national policy. All fire management decision contained in the KFO FMP conforms to the policies outlined in the national guidance. Specifically, the Federal Wildland Fire Policy (1995, revised 2001) states that every acre of federal land will have a site-specific FMP and provides guidance for a wide range of responses to fires occurring on these lands. The KFO is part of the Craig/Routt Fire Program in Northwest Colorado. The KFO planning area is in the eastern third of the area administered by the Craig/Routt Fire Program. During the development of the KFO FMP, interdisciplinary teams sought to fully integrate fire management with all other resource programs and developed polygons or land units that have varying levels of appropriate management response to wildland fire. The four polygon types and appropriate management response to each are detailed below.

Category A polygons are areas where fire is not desired at all. These areas include ecosystems where fire never played a significant positive role. Another factor that results in a category A classification are areas where suppression is required to prevent direct threats to life or property. All fires in these areas will be aggressively suppressed.

Category B polygons are areas where wildland fire is not desired. These are ecosystems where an unplanned ignition could have negative effects without mitigation. Like category A, fire suppression in these areas will be aggressive. "Negative effects" includes risks to private lands and urban interfaces, important cultural resources (such as Native American wickiups), areas with unnatural fuel buildups, and areas where the seed bank does not exist for natural reseeding.

Mitigation efforts include fuel reduction through mechanical means or prescribed fire to reduce fuel loading around private land and urban interfaces, creation of agreements to allow fire to cross from public to private lands, cultural resource inventories, and preparation of rehabilitation plans before a fire.

Category B areas are prime areas for identifying hazard fuel reduction projects to mitigate hazards. Once mitigation is in place, these areas could move into a C or D category.

Category C polygons are areas where fire is desired but where there may be social, political, or ecological constraints that must be considered. These constraints could include air quality considerations (proximity to class 1 airsheds or nonattainment areas), threatened or endangered species considerations (effects of fire on the survival of these species), or habitat considerations (both spatial and temporal). Habitat considerations could be described in terms of maximum burn acreage (e.g., no more than 10 percent of the polygon acreage can burn per year to preserve grouse habitat) or in terms of time of year (e.g., spring only).

Significant prescribed burning is expected in these areas for public and firefighter safety, as well as to help attain desired resource/ecological conditions.

Category D polygons are areas where fire is desired and there are few to no constraints to its use. These areas offer the greatest opportunity to take advantage of the full range of options available to the resource manager for managing fire under appropriate management response.

The National Fire Plan (NFP) embraces the whole range of suppression responses dependent on local analysis and needs. These suppression options include full and immediate suppression with a direct tactic to confinement of a fire to natural barriers for reasons of firefighter safety. Although the KFO interdisciplinary team and fire management specialists recognize that fire plays a natural role as part of the ecosystem, fire suppression unit designation (Category B polygon) has been assigned throughout the KFO. The KFO interdisciplinary team and fire management specialists limited the use of fire for resource benefit within the planning area at this time for the following reasons:

<u>Current availability of federal resources to manage fires in this KFO</u>—Presently, there is no full-time fire suppression resources stationed at the KFO that could take on the responsibility and time commitments that fire use entails. In the present setting, more often than not, the rural and county fire departments or the sheriffs arrive at a fire scene on BLM-administered public lands before the agency firefighters. The staffing levels for the Craig/Routt Interagency Fire Program are changing; for example, a zone fire management officer with responsibilities for the public lands within the field office is being filled (see VI Unit Program Summary, page 21, for discussion on expected changes in resource status).

Low fire occurrence and long fire return interval fuel structure—Analysis has shown that permanent staffing of fire resources at the KFO is economically unjustified due to the low incidents of fire occurrence. Due to climatic conditions and storm patterns, the fuel types that have evolved in this area are available to burn on a large scale in very infrequent years and for relatively short periods of time yearly. This has the affect of naturally building fuel beds until an infrequent fire occurs during a period of stress and large scale and often severe fire effects result. This type of disturbance pattern would foster a project orientated planning approach to mitigate the concerns of large scale severe fire effects before a fire use program could be effectively instituted.

Intermix of Public and Private Lands—The public lands of the KFO are interspersed with the private land owners of Jackson, Grand, Larimer, Eagle, and Summit Counties. The specialist reviewing the FMP for this planning area sees these intermingled lands as further complications in allowing fire use on BLM-administered public lands without affecting privately owned lands. The resources first on scene, usually the sheriff, county, or rural fire departments view these incidents the same, and full suppression is currently the response. Some counties within the state are addressing fire use for resource benefits through planning efforts of their own. As of this date the counties involved with this planning area respond to fire occurrence with an aggressive suppression response.

The KFO is divided into four fire management units (FMUs): B-1 Sagebrush, B-2 Lodgepole Pine, B-3 Pinyon-Juniper, and B-4 Troublesome WSA and Platte River WSA (Map 4–Fire Zones, **Appendix G**). Each FMU has its own specific fire management objectives.

The following are detailed descriptions of the four FMUs within the KFO.

KB-1. Sagebrush:

- Suppression is high;
- Prescribed fire/nonfire fuel treatment is low;
- Community assistance/protection is moderate;
- Total acres 889,738, 259,353 acres of which are BLM administered;
- Communities at risk are listed communities at risk from catastrophic wildfire that have been placed in a national listing (FR66 160 August 17, 2001; http://www.fireplan.gov/content/reports) and as well as other communities in becoming listed as at-risk communities. Communities at risk will develop wildfire protection plans and designating their WUI's for support from Federal agencies, State and local cooperators.

Fire Management Objectives

- **Vegetation Description and Desired Condition—**This area consists of sagebrush/grasslands with rare instances of intermittent timber found in the higher elevations.
  - fire regime, 4
  - condition class, 2
- **Resource Management Objective—**The primary objective is to protect private land interests that border public lands. Additional objectives include
  - Protect sage-grouse, deer, and pronghorn winter range by maintaining and improving browse conditions,
  - Provide some form of protection for oil and gas sites and associated facilities,
  - Provide protection for threatened and endangered plant species and areas with sensitive soils,
  - Provide ACECs at Kremmling Cretaceous Ammonite site and North Park Phacelia site.
- **Resource Constraints—**Optimally, no more than 5 percent (approximately 13,000 acres) of BLM-administered land in this polygon should be burned or regenerated by wildland fire in the next 10 years. If this threshold is approached, this plan should be reviewed for effectiveness.
- **Suppression constraints—**Full suppression but restrict heavy equipment use to slopes of less than 40 percent. Limit, as much as possible, ground disturbance in sensitive soil types. No mechanized equipment within ACEC boundaries or the sensitive soil areas between Blue River east to Barger Gulch. Use of mechanized equipment would be avoided in habitats that support federal listed endangered or threatened species, including Osterhout milkvetch (*Astragalus osterhoutii*), Penland penstemon (*Penstemon penlandii*), and North Park phacelia (*Phacelia formosula)*. Also, use of chemical fire retardants would be avoided in any habitat occupied by Osterhout milkvetch, Penland penstemon or North Park phacelia. These constraints would be waived when mechanized equipment or use of retardant is necessary to ensure firefighter safety.
- **Appropriate Management Response Strategy—**Direct control.

Planned Actions

- **Resource fuels treatments—**One to two projects per year, using mechanical chemical treatments, or prescribed burning to enhance forage and other attributes of wildlife habitat. These projects will be evaluated case by case using a separate environmental document.
- **Hazard fuels treatments—**One to two projects per year, possibly in conjunction with the resource fuels projects, approximately 100 acres to

break up fuel continuity. Use native seed for site rehabilitation where possible. Other fuel treatments in these areas may be considered as needed by a site-specific environmental document.

- **Suppression/prevention—**None.
- **Monitoring—**Fuels treatments and wildfires will be evaluated each year following the fire season to ensure that resource management objectives and constraints have been met or to determine if those objectives and constraints need to be modified. Check yearly for hazardous fuel buildup near critical boundaries.
- **Emergency Stabilization and Rehabilitation—**Fuels treatments, both natural and planned, will be evaluated each year following the fire season to ensure that resource management objectives and constraints have been met or to determine if those objective need to be modified. Check for hazardous fuel build-up near oil and gas facilities.

Wildland Fire Use

None.

KB-2. Lodgepole Pine

- Suppression is high;
- Prescribed fire/nonfire fuel treatments are moderate;
- Community assistance/protection is moderate;
- Total acres are 378,413, 91,464 of which are BLM administered;
- Communities at risk are listed communities at risk from catastrophic wildfire that have been placed in a national listing (FR66 160 August 17, 2001; http://www.fireplan.gov/content/reports) and as well as other communities in becoming listed as at-risk communities. Communities at risk will develop wildfire protection plans and designating their WUI's for support from Federal agencies, State and local cooperators.

Fire Management Objectives

- **Vegetation Description and Desired Condition—**Lodgepole pine stands interspersed with spruce/fir and aspen.
  - Fire regime is 5,
  - Condition class is 2.
- **Resource Management Objective—**Although the KFO staff recognizes that fire plays a natural role as part of the ecosystem, the primary objective at this time is to protect private land interest that borders public lands. Additional objectives include

- Protecting stands from large-scale fire by sound forest management and fuels reduction practices designed to create mosaics that would disrupt the continuity of crown and ground fuels and
- Protecting stands from insect infestations through best management practices (BMPs) and fuels reduction projects.

- **Resource Constraints—**Optimally, less than 10 percent (approximately 9,000 acres) of BLM-managed lands should be burned or regenerated by wildland fire in the next 10 years. If this threshold is approached, this plan should be reviewed for effectiveness.
- **Suppression Constraints—**Full suppression but restrict heavy equipment use to slopes of less than 40 percent. Limit, as much as possible, ground disturbance in sensitive soil types. Avoid using heavy equipment, such as bulldozers, to construct new roads and trails in areas identified as potential habitat for Canada lynx (*Lynx canadensis*). Avoid using heavy equipment and chemical retardant in any wet areas, including ponds, springs, and seeps, in the lodgepole vegetative type. These wet areas are potential habitat for boreal toads and should be protected from suppression activities to the extent possible. These constraints would be waived if heavy equipment or use of chemical retardants is necessary to ensure firefighter safety. In this case, post fire management rehabilitation would rehabilitate new roads or trails constructed and/or other impacts on threatened, endangered, proposed or candidate species as a result of fire suppression activities. Post fire management rehabilitation would also rehabilitate to pre-fire conditions, to the extent possible.
- **Appropriate Management Response Strategy—**Direct or perimeter control.

Planned Actions

- **Resource fuels treatments—**One to two projects per year using mechanical chemical treatments or prescribed burning to enhance forage and other attributes of wildlife habitat. These projects will be evaluated case by case using a separate environmental document.
- **Hazard fuels treatments—**One to two projects per year possibly in conjunction with the resource fuels projects approximately 150 acres to break up fuel continuity. Use native species for site rehabilitation where possible and necessary. Other fuel treatments in these areas may be considered as needed by a site-specific environmental document.
- **Suppression/prevention—**No projects planned at this time. Projects may be considered by a site-specific environmental document.
- **Monitoring—**Fuels treatments and wildfires will be evaluated each year following the fire season to ensure that resource management objectives and constraints have been met or to determine if those objectives and constraints

need to be modified. Check yearly for hazardous fuel buildup near critical boundaries.

- **Emergency Stabilization and Rehabilitation—**Fuels treatments, both natural and planned, will be evaluated each year following the fire season to ensure that resource management objectives and constraints have been met or to determine if those objective need to be modified. Check for hazardous fuel build-up near oil and gas facilities.

Wildland Fire Use

None.

KB-3. Pinyon-Juniper

- Suppression is high;
- Prescribed fire/nonfire fuel treatments are moderate;
- Community assistance/protection is moderate;
- Total acres are 52,952, 24,464 of which are BLM administered;
- Communities at risk are listed communities at risk from catastrophic wildfire that have been placed in a national listing (FR66 160 August 17, 2001; http://www.fireplan.gov/content/reports) and as well as other communities in becoming listed as at-risk communities. Communities at risk will develop wildfire protection plans and designating their WUI's for support from Federal agencies, State and local cooperators.

Fire Management Objectives

- **Vegetation Description and Desired Condition—**Generally, an overstory of pinyon/juniper interspersed at times with Douglas-fir, aspen, and small areas of ponderosa pine.
  - Fire regime is 5,
  - Condition class is 2;
- **Resource Management Objective—**Although, the KFO staff recognizes that fire plays a natural role as part of the ecosystem, the primary objective, at this time, is to protect private land interests that border public lands. Additional objectives include
  - Protect critical winter range for deer and elk,
  - Protect cultural sites (Yarmony Pit House),
  - Protect developed recreation sites and trails on or adjacent to public lands (Pump House, Radium, Rancho-Del-Rio, and State Bridge), and
  - Protect winter habitat for bald eagles along the Colorado River;
- **Resource Constraints—**Optimally, less than 10 percent (approximately 2,400 acres) of BLM-managed lands (approximately 2,400 acres) should be

burned or regenerated by wildland fire in the next 10 years. If this threshold is approached, this plan should be reviewed for effectiveness;

- **Suppression Constraints—**Full suppression but restrict heavy equipment use to slopes of less than 40 percent. Limit, as much as possible, ground disturbance in sensitive soil types and near known cultural sites. Avoid use of mechanized equipment near known cultural sites or developed recreation areas unless necessary to assure firefighter safety. Avoid removal of large spruce, fir, or cottonwood trees along the Colorado River during suppression activities, unless identified as a safety hazard.
- **Appropriate Management Response Strategy—**Direct or perimeter control.

Planned Actions

- **Resource Fuels Treatments—**Treat 1,000 acres over the next decade using mechanical, chemical treatments, or prescribed burning to enhance forage and other attributes of wildlife habitat. These treatments may be in conjunction with fuels reduction treatments to protect against large scale disturbance from fire. These projects will be evaluated on a case by case basis using a separate environmental document.
- **Hazard Fuels Treatments—**1200 acres over the next decade in conjunction with the Resource Fuels treatments above to protect areas from large scale disturbance from fire and to protect property. Use native species for site rehabilitation where possible and necessary. Other fuel treatments in these areas may be considered as needed by a site-specific environmental document.
- **Suppression/prevention—**One or two projects every other year (50 acres.), mechanical, chemical or prescribed burning, to protect developments, critical habitat and cultural sites.
- **Monitoring—**Fuels treatments and wildfires will be evaluated each year following the fire season to ensure that resource management objectives and constraints have been met or to determine if those objectives and constraints need to be modified. Check yearly for hazardous fuel buildup near critical boundaries.
- **Emergency Stabilization and Rehabilitation—**Fuels treatments, both natural and planned, will be evaluated each year following the fire season to ensure that resource management objectives and constraints have been met or to determine if those objective need to be modified. Check for hazardous fuel build-up near oil and gas facilities.

Wildland Fire Use

None.

KB-4. Troublesome Wilderness Study Area and Platte River WSA

- Suppression is high;
- Prescribed fire/nonfire fuel treatment is low;
- Community assistance/protection is low;
- Total acres 8,687, 8,087 acres of which are BLM administered;
- Communities at risk are listed communities at risk from catastrophic wildfire that have been placed in a national listing (FR66 160 August 17, 2001; http://www.fireplan.gov/content/reports) and as well as other communities in becoming listed as at-risk communities. Communities at risk will develop wildfire protection plans and designating their WUI's for support from Federal agencies, State and local cooperators.

Fire Management Objectives

- **Vegetation Description and Desired Condition—**Primarily, lodgepole pine timber type, which bounds the Routt National Forest;
  - Fire regime is 5,
  - Condition class is 2;
- **Resource Management Objective—**Although, the KFO staff recognizes that fire plays a natural role as part of the ecosystem, the primary objective at this time is to protect private land interests that border public lands and adjacent USFS lands. Additional objectives include:
  - Providing some form of protection for private in-holdings and structures within WSA,
  - Protect wilderness characteristic in all suppression and prescribed fire operations,
  - Follow H-8550-1 Interim Management Policy for Lands Under Wilderness Review (Appendix C, p. C-1), and
  - Emphasize use of minimum impact tactics (see definitions Appendix B) on suppression actions where fire is not threatening private land;
- **Resource Constraints—**None.
- **Suppression Constraints—**Avoid suppression activities that would unnecessarily impair the area's suitability for preservation as wilderness. Use equipment and tactics designed to minimize impacts on wilderness characteristics. The use of mechanical and earthmoving equipment may be authorized by the agency administrator to meet firefighter safety, protect life and property, and minimize suppression impacts on the land. Use of heavy equipment such as bulldozers would be avoided in areas identified as potential habitat for Canada lynx (*Lynx canadensis*) where new road or trail construction would be an end result of equipment use. Use of heavy equipment and chemical retardant in any wet areas, including ponds, springs,

and seeps that occur in the lodgepole vegetative type would be avoided. These wet areas are potential habitat for boreal toads and should be protected from suppression activities to the extent possible. These constraints would be waived if heavy equipment or use of chemical retardants is necessary to ensure firefighter safety. In this case, post fire management rehabilitation would rehabilitate new roads or trails constructed or other impacts on threatened, endangered, proposed, or candidate species and suitability of the area for preservation as wilderness as a result of fire suppression activities and rehabilitate to pre-fire conditions, to the extent possible.

- **Appropriate Management Response Strategy—**Direct or perimeter control.

Planned Actions

- **Resource Fuels Treatments—**None planned.
- **Hazard Fuels Treatments—**None. Other fuel treatments in these areas may be considered as needed by a site-specific plan. Use native species for post-treatment activities.
- **Suppression/Prevention—**One or two projects every five years (50 acres), mechanical, chemical, or prescribed burning, to protect the area's suitability for preservation as wilderness or private property interface.
- **Monitoring—**Fuels treatments and wildfires will be evaluated each year following the fire season to ensure that resource management objectives and constraints have been met or to determine if those objectives and constraints need to be modified. Check yearly for hazardous fuel buildup near critical boundaries.
- **Emergency Stabilization and Rehabilitation—**Fuels treatments, both natural and planned, will be evaluated each year following the fire season to ensure that resource management objectives and constraints have been met or to determine if those objective need to be modified. Check for hazardous fuel build-up near oil and gas facilities.

Wildland Fire Use

None.

2006 Northwest Colorado Fire Management Plan—The purpose of the Northwest Colorado Fire Management Program FMP is to identify and integrate all wildland fire management guidance, direction, and activities required to implement national fire policy and fire management direction from the *Federal Wildland Fire Management Policy and Program Review-1995 and 2001*,*the Interagency Fire Management Plan Template*, and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan*. All fire management objectives, constraints, and activities contained within this plan are consistent with the management directives found in the Kremmling FMP.

The fire management goals identified in Appendix B, pp. B-1 through B-175, of this plan for the public lands administered by all cooperating agencies have been incorporated into the wildland fire management goals detailed below.

Goal: Safety/Health—Maintain levels of readiness and effectively manage unplanned wildland fires to protect employees and the public, in compliance with all departmental and agency policies and cooperative agreements.

Goal: Natural Fire—Establish and maintain a program for the use of naturally occurring fire (Wildland Fire Use (WFU)), in accordance with departmental and agency policy and scientifically based parameters, that maximizes opportunity for fires to run their natural course, managed only as necessary to address health and safety issues and protect life, property, and other values at risk.

Goal: Restoration/Maintenance—Manage fires prudently and in concert with resource management planning and a system of fire effects monitoring and analysis, to restore and maintain natural biodiversity.

Goal: Endangered Species/Heritage Sites/Wilderness Values—Minimize impacts of wildland fires and suppression actions on threatened and endangered species, wilderness values, and heritage sites, while continuing to minimize human interference with the natural role of fire. Use prescribed fire to protect, maintain, and restore critical species habitat, heritage sites, and wilderness values.

Goal: Staffing/Equipment—Obtain and maintain the necessary staffing and equipment, in accordance with NWCG standards and agency policy, to manage wildland and prescribed fires to meet resource management goals and to safely protect health, life, and property.

Goal: Cooperative Efforts—Continue to implement cooperative management efforts and agreements with state, local, and other federal agencies to provide efficient, cost-effective, fire management activities that mitigate wildland fire risks and meet resource management needs.

Goal: Fire Education—Provide educational opportunities for agency personnel, cooperators, other government agencies, and the public regarding the natural role of fire and fire management and prevention.

Goal: Monitoring—Monitor fire effects, environmental conditions, and fire behavior to ensure that management and fire incident objectives are met.

The purpose of this plan is also to achieve the goals put forth in the 10-Year Comprehensive Strategy, the Cohesive Strategy, and NFP, as well as other wildland fire policy. The fire program goals listed above are also designed to achieve additional goals identified in these documents.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

BLM-administered public lands are managed under four fire management classes for of wildland fire and prescribed vegetation management. The fire management classes (A-D) are based on BLM IM No. 2002-034 (11/15/20010 AND Clarification of Fire Management Categories and RMP-Level Decisions; H-1601-1 Land Use Handbook).

The KFO is identified within fire suppression unit designation ("B" polygon) and is divided into four FMUs: B-1 = Sagebrush, B-2 = Lodgepole Pine, B-3 = Pinyon-Juniper, and B-4 = Troublesome and Platte River WSAs. Each FMU has its own specific fire management objectives.

Fire plays a natural role in the ecosystem and can no longer be kept out of the system. Wildland fire is managed using the following criteria within the KFO FMUs:

- Wildland fire suppression—All unwanted wildland fires are suppressed;
- WFU—Currently not used;
- Prescribed fire—Prescribed fire will be used in FMU B to meet identified resource management or hazard fuel reduction objective;
- Nonfire application—Mechanical treatments (not within wilderness or potential wilderness or similarly restricted, for example, heritage sites.

The FMU's have limitations in the amount of areas to be treated using prescribed fire and mechanical treatments, along with the exclusion of fire use. These limiting factors need to be increased to allow for needed treatments and application over time by reevaluating the FMU to change to a C polygon where wildland fire is desired but some constraints limit fire use potential with limited prescription.

Management practices used to reduce fuel loading and alter vegetative communities to improve wildlife habitat include mechanical treatments using Dixie harrow, Lawson aerator, brush beating, hot saw, and hand thinning, combined with prescribed fire for vegetative treatments. Monitoring has consisted of using transects for vegetation and taking photos. Collaboration has been with the CDOW, Habitat Partnership Program, the USFS, Grand County, and Jackson County.

Historically, the area has had few natural fire starts, with long fire return intervals; in the past all natural fires have been suppressed directly. This has allowed for the continued increase in high fuel loading. The result of higher fuel loading makes natural fires in these areas burn hotter, and more intense conditions than normal causes sterilization of soils and the set back to an early seral stage for a longer period. In other areas, there is less understory than in the past and it can no longer carry fire through these communities; as a result, the understory provides less forage for wildlife.

Fire use should be evaluated in areas that need natural and manipulated vegetative treatments. Positive impacts include the following:

- Reduced acceptable level, risks, and consequences of unwanted wildland fires;
- Reduce hazardous fuel loading and risks of wildland fire escaping public lands; and
- Allow for the development of vegetation mosaic of diverse seral stages;
- Improve herbaceous understory in pinyon-juniper and lodgepole pine stands; and
- Improve wildlife habitat.

Input has been provided to Community Wildfire Protection Plans for fuels treatment identified by communities at risk of wildland fire. These plans will provide the agency with on the ground community input and support directed to areas for needed treatments.

Wildland urban interface—The operational roles of federal agencies as partners in the WUI are wildland firefighting, hazardous fuels reduction, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility of tribal, state, or local governments. Federal agencies may assist with exterior structural protection activities under formal fire protection agreements that specify the mutual responsibilities of the partners, including funding. Some federal agencies have full structural protection authority for their facilities on lands they administer and may also enter into formal agreements to assist state and local governments with full structural protection.

2.1.9 Cultural and Heritage Resources

A. Relevant Plans and Amendments

The 1984 RMP does not contain any specific decision guidance relating to tribal interests. However, as part of the cultural resource program, the KFO will continue Native American consultation to identify any traditional cultural properties, sacred/religious sites, or special use areas. Letters to the Southern Ute, the Mountain Ute, the Ute of the Uintah and Ouray Bands, the Northern Arapaho, and the Shoshone Tribes are being prepared and will be sent asking for their comments and input. If tribally sensitive areas are identified or become known through the Native American notification or consultation process, their concerns will be addressed through planning. The KFO will protect and preserve Native American cultural and sacred sites and Native American access to these sites whenever possible. The KFO will take no action that would adversely affect these areas or location without consulting the appropriate Native Americans.

Desired Outcomes/Goals and Objectives

Kremmling RMP/ROD Updated 1999 (p. 12, a) (objective): To inventory, evaluate, mitigate, and protect cultural resources, giving priority to those that are associated with proposed actions where surfaces will be disturbed. The preferred method of cultural resource mitigation or protection is to design projects so as to avoid sites. Sites eligible for listing or already listed on the National Register of Historic Places (NRHP) will receive some additional degree of protection.

Management Actions

Kremmling RMP/ROD Updated 1999 (p. 12, b) (action): Complete Class 1 Cultural Resource Inventory for the KFO. This baseline inventory will serve as a starting point for evaluating archaeological resources in the KFO.

Kremmling RMP/ROD Updated 1999 (p. 12, b) (action): Protect the Windy Gap Archaeological Site through periodic site monitoring and withdrawal from mineral entry. Prepare activity plan to delineate management.

Kremmling RMP/ROD Updated 1999 (p. 12, b) (action): Protect the North Sand Hills Archaeological Sites through periodic site monitoring and physical protection, as outlined in the North Sand Hills Recreation Area Management Plan to be developed.

Kremmling RMP/ROD Updated 1999 (p. 12, b) (action): Review all proposed actions involving surface disturbance in order to evaluate potential affects on cultural resources. Mitigate or protect cultural resources that may be affected.

1991 Oil and Gas Development Amendment ROD (p. 18, 11) (stipulation): NSO stipulation for Windy Gap Archaeological Sites Area—protection of archaeological sites.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Identification and protection of Cultural Resource Sites—Cultural resources are recognized as fragile irreplaceable resources with potential public and scientific uses, representing an important and integral part of our nation's heritage. Within the KFO, cultural resource management encourages responsible scientific use of cultural resources by protecting and preserving examples of cultural and historical resources and by continuing to identify and evaluate cultural resources in accordance with the following laws, regulations, and guidelines: Antiquities Act of 1906 (36 CFR 800.2, 16 USC 432, 433); Historic Sites Act of 1935 (16 USC 461); National Historic Preservation Act of 1966 (16 USC 470, as amended); NEPA (42 USC 4321); Executive Order 11593 (36 CFR.8921); Historical and Archaeological Data-Preservation Act of 1974 (16 USC 469); FLPMA (43 USC 1701); Archaeological Resources Protection Act of 1979 (16 USC 470a et seq.) as amended; American Indian Religious Freedom Act of 1978 (42 USC 1996); Native American Graves and

Repatriation Act of 1990 (25 USC 3001-3013), American Indian Religious Freedom Act (42 USC 1996 and 1996a), and Executive Order 13007 (Indian Sacred Sites).

The KFO has an partnership program, including past partnerships with the University of Wyoming, the University of Colorado at Boulder, Colorado State University, the Colorado School of Mines, the Denver Museum of Nature and Science, the Grand County Historical Association and Museums, and the University of Northern Colorado. Current partnerships continue with the University of Wyoming and the University of Northern Colorado. These programs have contributed enormously to the knowledge of cultural resources in Middle and North Parks, have provided opportunities for hundreds of students and vocational archaeologists to learn hands-on excavation archaeology, mapping skills, artifact analysis, cataloguing, and curation, and have contributed tens of thousands of volunteer hours to the KFO cultural program. Numerous students have earned Master's and doctoral degrees using the resources in KFO as their basis for their theses and dissertations.

A monitoring program is established within the KFO cultural resource program to periodically monitor and document at-risk and potentially at-risk cultural sites, for degradation from natural erosional processes and from erosion exacerbated by human activities. Human activities include deliberate theft and vandalism; ground-disturbing activities include construction, maintenance, livestock grazing, OHV use, recreation, wildlife impacts, oil and gas, mineral exploration and development, and lumbering.

A more formal monitoring program is directed at the Windy Gap Archaeological Sites Area, which is monitored one to two times per year. Additionally, twelve cultural sites within the sand dunes at the North Sand Hills SRMA were minimally protected with metal posts and rope exclosures and were monitored yearly until 1997, when BLM Law Enforcement personnel removed the exclosures for safety reasons. In 1998, three of the thirteen sites were relocated and tested for eligibility to the NRHP. Eight of the remaining nine sites were reevaluated for NRHP eligibility. Testing and reevaluation established that eleven of the cultural sites lack integrity due to the unstable nature of the sand dunes, natural erosion, and several decades of recreational impacts from OHVs. Despite numerous attempts by several different archaeologists, the remaining site has never been relocated.

The KFO cultural program has provided interpretation at several sites and has other locations in various stages of interpretive development. Interpretive signs are placed at the Windy Gap Cultural Sites Area, the North Sand Hills SRMA, the Independence Mountain Tipi Ring , the Kremmling Cretaceous Ammonite locale, and the Beam Burtcher Grave site. Interpretive signs are being developed for the Horseshoe Ranger Station and the Jesse Hockett Homestead. New or replacement signs are desired at the Yarmony Pit House site and the Kremmling Cretaceous Ammonite site.

A concentration of prehistoric architectural features and a major quarry source of tool stone (Kremmling Chert) in the East Sulphur Gulch area are contemplated as a new ACEC. If potentially suitable for designation as an ACEC, the area would require a cultural inventory and recording of the archaeological sites and features, an evaluation of the sites for NRHP eligibility, a consultation with and involvement of the American Indians to assist with interpreting and establishing limitations, developing a trail head, hiking trail, interpretive signs (handicap accessible and interpreted), a brochure and map, site hardening, routine monitoring, and maintenance.

A new initiative for the BLM is the development of a program to support heritage tourism. This is a relatively new and expanding form of travel where the goal is having authentic recreational experiences that emphasize personal learning and hands-on experience to increase awareness, appreciation, and stewardship of our natural resources. In the National Colorado River Scenic Byway and the existing road infrastructure in KFO, there are cultural and paleontological resource sites that could be suitable for development as interpreted wayside stops, loop drives, and destination locations. A successful initiative to support heritage tourism would necessarily involve numerous local agencies, towns, counties, chambers of commerce, and museums, with emphasis on interpreting local history, local character, and authenticity, while being sensitive to maintaining the local rural lifestyle. It is important that heritage tourism partnerships reflect a self-sustaining community-driven vision and local ownership. A successful partnership will support local businesses and help to foster cottage industries. By supporting and contributing to a broad-based heritage tourism initiative, KFO can help to direct tourists to cultural areas that are suitable to interpretation and away from those that are not. KFO can also help lessen resource impacts through education, appreciation, and mitigation.

2.1.10 Paleontological Resources

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling RMP/ROD Updated 1999 (p. 4, a) (objective): To protect fossils of scientific interest and give special consideration to those fossils of significant value.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Past and current management practices have had little appreciable effect on paleontological resources. There have been no reported instances of damage to paleontological resources resulting from RMP management decisions.

At least forty groups and institutions from the 1850s to present have collected fossils in the KFO area (Armstrong and Wolny 1989). In that time, over 1,000 paleontological localities have been documented for the KFO region. Fossils

recovered from these localities represent a diverse array of plants, invertebrates, and vertebrates. Scientific activity has occurred during the past several years, and there are currently active paleontological use permits issued for the BLM-administered land within the KFO.

2.1.11 Wilderness Characteristics

The 1984 RMP did not address wilderness characteristics outside of WSAs. During the RMP revision process, the KFO will analyze whether any BLM-administered public lands outside the three WSAs possess wilderness characteristics.

2.1.12 Visual Resources

A. Relevant Plans and Amendments

The 1984 RMP did not specifically address management objectives for visual resources. Visual Resource Management (VRM) in the RMP planning area is based on a visual resource inventory done during 1979 and 1980. The inventory evaluated the landscape's physical appearance or scenic quality, its visual sensitivity, and its location. Based on this information, potential management classes were identified.

Allowable Uses

1991 Muddy Creek Reservoir RMP Amendment ROD (p. 16) (objective): 1,460 acres of Class II and 700 acres of Class III VRM Class area are changed to Class IV. More research is needed to identify the exact boundary for this change, but the majority of the land is most likely under water.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Existing Management

Existing management follows the guidance given in the preferred alternative (BLM 1984). Visual quality is managed at the existing limited management level for sensitive Class II areas (those seen from major travel routes and adjacent to the intensively managed recreation area). These are areas of special concern because of their inherent scenic value and locations along major travel routes, such as highways and the upper Colorado River. Visual quality in these areas is maintained primarily through mitigating measures designed to reduce the degree of contrast with the surrounding landscape to acceptable levels established for Class II areas. Efforts are made to maintain the visual quality of the remaining public lands in the KFO planning area and to meet the needs of other resource uses and activities.

The inventory classes need to be evaluated against management objectives and adjusted to reflect those decisions.

WSAs—BLM policy (IM 2000-96 and BLM Handbook H-8410-1) has directed that all WSAs receive a Class I VRM designation instead of the Class II designation previously applied. The VRM inventory characterized the Troublesome WSA as

Class II, with a small portion classified as Class IV. The Platte River Contiguous inventory classification is Class III. If a WSA is designated as wilderness, the area would continue to be managed as VRM Class I. However, if the WSA is released from WSA status, the RMP for the area would need to be amended and appropriate VRM management objectives would be established.

The goals and objectives for SRMAs and ACECs may need to be reviewed to verify if VRM is consistent with the management objectives of those areas, if they were designated based on visual resources.

2.1.13 Cave and Karst Resources

The 1984 RMP did not specifically address management objectives or management actions for cave and karst resources.

2.2 RESOURCE USES

2.2.1 Energy and Minerals

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling RMP/ROD Updated 1999 (p. 3, 1, a) (objective): To maximize the availability of the federal mineral exploration and development. This plan was selected because it allows the best mechanism for meeting BLM management objectives. It maximizes the number of acres of federal mineral estate open for development, while protecting other resources and allowing for resource recovery and impacts mitigation.

1991 Oil and Gas Leasing and Development EIS-Level Amendment/ROD (p. 11) (objective): Facilitate the orderly, economic, and environmentally sound exploration and development of oil and gas resources using balanced multiple-use management.

Management Actions

Kremmling RMP/ROD Updated 1999 (p. 3, b) (allocation): All of the federal mineral estate will remain open to entry under the General Mining Law of 1872, with the exception of specifically withdrawn lands, which total 1,351 acres, less than one percent of the mineral estate. Withdrawn lands include 397.8 acres for the Windy Gap archaeological site and 671 acres in the North Sand Hills. Acres under consideration for wilderness designation remain open provided activities meet nonimpairment criteria and that those activities began before the passage of FLPMA.

Kremmling RMP/ROD Updated 1999 (p. 3, b) (allocation): Approximately 45,000 surface acres are available for future coal leasing. A preliminary application of twenty unsuitability criteria revealed 7,190 acres are unsuitable for surface mining. A final decision on other applications of unsuitability criteria will not be made on existing, nonproducing coal leases until the mine plan review stage.

Kremmling RMP/ROD Updated 1999 (p. 3, b) (allocation): Federal mineral estate will remain open to oil and gas leasing under the Mineral Leasing Act of 1920, except for approximately 10,120 acres designated as No Leasing. Some lands are specifically encumbered with surface use restrictions, such as NSO on approximately 27,775 acres, Timing Limitations on 224,605 acres, and CNHP on 22,300 acres. Some restrictions overlap, and approximately 380,000 acres of federal mineral estate are open to oil and gas leasing and development with only standard lease stipulations.

Kremmling RMP/ROD Updated 1999 (p. 3, b) (allocation): Federal lands will provide mineral materials to meet local demands. Materials will be provided by free use permit to government agencies. Mineral materials from public lands will fill demands not provided by private sources.

1991 Oil and Gas Leasing and Development EIS-level Amendment/ROD (p. 11) (allocation/stipulations):

- The Troublesome and Plate River Contiguous WSA will not be leased. This is 9,495 acres of BLM-administered mineral estate within the KFO;
- 640,880 acres of BLM-administered mineral estate within the KFO are open to oil and gas leasing and development, subject to lease terms and (as applicable) lease stipulations noted in Appendix A of this document;
- NSO stipulations will be used to protect some coal mines; the Kremmling Cretaceous Ammonite and North Park Phacelia ACECs, grouse leks; nesting sites for raptors, bald eagles, peregrine falcons, owls, waterfowl and shorebirds, habitats; special status plant species; Windy Gap Cultural RNA; Colorado River SRMA; North Sand Hills SRMA; and the Sulphur Ranger District Office;
- Timing Limitation Stipulations will be used to protect crucial big game winter habitat, big game birthing areas, grouse winter habitat, and nesting habitat for greater sandhill cranes, white pelicans, raptors, bald eagles, and peregrine falcons (see Map 3 and Appendix A);
- CNHP stipulations will be used to protect some coal mines, riparian/wetland vegetation, and steep slopes (see Map 4 and Appendix A);
- Lease Notices will be used to alert lessees of requirements in Class I and II Paleontological Areas and sage-grouse nesting areas (see Appendix A); and
- Conditions of Approval (COAs) will be applied to operation approvals (applications for permit to drill [APDs] and Sundry Notices) as determined necessary by the authorized officer to protect other resources and values within the terms, conditions, and stipulations of the lease contract. A list of the most common COAs is found in Appendices D and F of the Final EIS.

2.2.2 Livestock Grazing Management

Appendix B contains comprehensive information on each allotment in the KFO, such as acreage, management category, whether the allotment was assessed for standards and whether it passed, and the type of vegetative communities to name a few

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling RMP/ROD (p. 7, a, 1) (objective): Allocate base level of livestock forage estimated to be 39,726 animal unit months (AUMs), a level that will be refined as monitoring data becomes available. The status of the decision is that the current AUM level is 39,686.

1997 Standards for Public Land Health and Guidelines for Livestock Grazing RMP Amendment (p. 16) (objective): Remove livestock grazing management objective #3, which reads, "To improve overall range condition on permitted lands from the current 20 percent in satisfactory condition to 70 percent." Rationale: These percentages were expressed in terms of seral stages and are not consistent with the standards.

1997 Standards for Public Land health and Guidelines for Livestock Grazing RMP Amendment (p. 16) (objective): Modify livestock grazing management objective 2 to read, "To increase sustained forage production in 20 years by 37 percent to an estimated level of 54,296 AUMs and intensify management on 76 large allotments representing 51 percent of the public land, commensurate with public land health standards." Rationale: The referenced increases in forage levels and intensified management may or may not be achieved or exceeded depending on the results of applying the standards and guidelines.

Management Actions

Kremmling RMP/ROD Updated 1999 (p. 5, b) (action): The 311 grazing allotments in the KFO planning area were prioritized for management according to one of the three levels: M (maintain), I (improve), and C (custodial) (20 M [satisfactory condition], 76 I [unsatisfactory condition], and 215 C [small unconsolidated allotments or allotments] give priority for other land uses). See detailed management actions for each group of allotments below. The status of this decision is that allotments have been ranked and adjustments will be made as monitoring data becomes available. There have been a number of range improvement projects that have been completed since the 1984 RMP. However, the exact number is unknown.

The criteria used for placing allotments in a management category were the presence of resource conflicts or problems and the potential for improvement, as outlined in the BLM's Selective Management Policy. The management actions planned for each group of allotments includes the following:

Management Level M

- Maintaining or increasing livestock stocking rates and adjusting season of use, based on the range condition inventory and monitoring studies;
- Implementing comprehensive use supervision and monitoring studies on those allotments that warrant an increase in stocking rates; conducting minimum intensity use supervision and monitoring on remaining allotments. Comprehensive monitoring studies include the collection of actual use and climatic data in the short term in order to supplement inventory data. Trend studies would be added as grazing plans were developed. Minimum intensity use supervision and monitoring include compliance checks to ensure adherence to annual grazing authorizations;
- Consulting with all grazing permittees/lessees concerning adjustments in allocation and management decisions affecting their allotments; and
- Investing in cost-effective range improvements (primarily through private investment) as needs arise to further improve forage condition. Specifically, additional water developments may aid in improving allotment management by lengthening the season of use, spreading usage more evenly over the range, and opening up more range to grazing. Additional fencing may be required to provide for better distribution of grazing. Interior pasture fencing would allow for opportunities to defer or rest portions of an allotment. Other management facilities, such as corrals and holding pens, may be authorized where the need arises for the containment or shipping of livestock.

Opportunities may also exist for the authorization of vegetation manipulation in areas where optimum herbaceous forage production is inhibited by brush species. Manipulations would be designed on range sites that have a medium or high potential for forage production and that would meet the following additional criteria:

- Grazing distribution and use of an allotment would be enhanced;
- Treated areas would be isolated and rested for a minimum of two spring growing seasons following the manipulation; and
- Wildlife habitat values would be enhanced.

The types of vegetation manipulations that would be considered include chemical control, prescribed burning, and mechanical control.

Additionally, artificial seeding may be required following a vegetation manipulation when insufficient desirable forage plants remain or to supplement needed early spring or late fall pasture. Such areas would receive proper seedbed preparation, followed by the drilling or broadcasting of selected seed. All seed must be certified weed free.

All range improvement proposals would be subject to site-specific environmental analysis and would adhere to development plans designed to provide a framework for meeting multiple-use objectives.

Management Level I

- Ranking allotments to receive priority management, beginning with those that have wildlife/livestock forage or habitat conflicts and watershed and water quality problems associated with livestock grazing use;
- Adjusting stocking rates to proper allocation levels in accordance with the range condition inventory/monitoring studies data;
- Designing grazing systems, providing minimum rest requirements, or adjusting season of use for all allotments. Grazing allotments may also be combined for management purposes. Additionally, other agency lands (state, USFS) would be considered for incorporation into consolidated grazing plans;
- Conducting comprehensive use supervision and monitoring to assess the effectiveness of prescribed grazing systems or to refine and update the range condition inventory data. Comprehensive monitoring studies include the collection of actual use and climatic data in the short term to supplement inventory data. Trend studies would be added as grazing plans were developed;
- Consulting with all permittees/lessees concerning adjustments in allocation and management decisions affecting their allotments;
- Investing in cost-effective range improvements (primarily through public investment) to implement grazing systems and meet the objectives of grazing plans. The specific types of range improvement projects needed are listed by allotment in Appendix 4 of the Final RMP/EIS.

Stock water developments may be authorized when implementing grazing systems to improve livestock distribution. would be authorized as a basis for implementing grazing systems; additional water sources could be turned on and off to regulate cattle distribution and use within pastures. This would allow previously developed water facilities to receive less concentrated use and would enhance grazing uniformity within pastures/allotments.

Interior fencing may be authorized to develop pastures for implementing grazing systems that may provide periods of rest for each area of an allotment. Other management facilities, such as corrals and holding pens, would be authorized where critical needs arise for the containment and shipping of livestock.

Vegetation manipulations (mechanical, spraying, and burning) would be authorized, along with reseeding, in areas that are producing significantly under their potential forage production. These manipulations would be designed on range sites that have a medium to high potential for forage production and that would meet the criteria for

vegetation manipulations, as described for Management Level M and in Appendix 1 of the Final RMP/EIS.

All range improvement proposals would be subject to site-specific environmental analysis and would adhere to development plans designed to provide a framework for meeting multiple use objectives.

Management Level C

- Adjusting stocking rates and season of use where necessary on allotments where the range condition inventory and monitoring studies dictate. Where the inventory has not been conducted, stocking rates and season of use would remain as currently authorized;
- Consulting with all grazing permittees/lessees concerning adjustments in allocation and management decisions affecting their allotments;
- Emphasizing development of long-term agreements with the Natural Resources Conservation Service (NRCS) in order to incorporate public lands into a comprehensive ranch grazing plan;
- Authorizing range improvements (primarily through private investment) in order to meet the requirements of comprehensive range grazing plans. Vegetation manipulations may be authorized as a management tool where opportunities exist for improving range condition. All range improvement proposals would be subject to site-specific environmental analysis;
- Conducting periodic compliance checks to ensure adherence to annual grazing authorizations.

Special Implementation Needs

Depending on the location, type, and size of the project, consultation with other companion agencies, such as the US Department of Agriculture (USDA), NRCS, USFS, State Land Board, or CDOW may be required.

As grazing plans and project schedules and proposals are developed, close consultation with the grazing permittees will be necessary.

d. Rationale

The major livestock issues identified in the Kremmling RMP/EIS were how livestock and wildlife forage could be properly allocated and what could be done to provide needed range improvements on grazing allotments. The proposed plan focused on these issues by identifying grazing management as a priority resource program in the area, emphasizing a balanced allocation of forage resources and targeting a group of priority allotments to receive intensive management (range improvement development). The proposed plan is also consistent with current BLM

policy to direct available funding and manpower on those areas where problems and conflicts have the greatest potential for improvement.

e. Implementation/Priorities

The grazing program will be implemented in the following order of priority:

- Enter into mutual agreements or render grazing decisions reflecting the allocation of forage to the proper levels indicated by the range condition inventory and monitoring studies. During this process other grazing permit adjustments may be negotiated with the permittee such as changing livestock class and season of use.
- Develop grazing plans and range improvement projects that meet livestock operator needs and resource requirements and objectives. First, plans would be developed for the 76 Management Level I allotments, followed by the 20 Management Level M allotments, and finally by the 2015 Management Level C allotments..
- Continue to implement a monitoring program to properly evaluate
  - Changes in grazing plans, include adjusting stocking rates, season of use, rest or deferment, and installation of range improvement projects.
  - Grazing use on newly implemented grazing plans.

f. Monitoring/Schedule

As described above, priority grazing allotments will be monitored annually as funding and manpower is available. The primary data collected in the studies will be verified actual use records, grazing utilization using the Key Species Method and climatic data. Range trend studies will be conducted on allotments with active grazing plans.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Existing Management

Currently, 337,414 acres of BLM-administered public lands, or 89 percent of public lands within the RMP planning area, are allocated for livestock grazing. These public ranges are permitted at a level of 39,686 AUMs of forage. There are six allotments that have been voluntarily relinquished or are not attached to private base property. These allotments are 7561 Spruce Creek, 7573 Lawson Ridge, 7505 Sulfur Gulch, 7755 Selak E, 7522 Selak, and 7524 Fraser River. Grazing could still occur in these allotments in the future. The RMP would designate the 120 acre parcel of BLM administered land in T2N, R79W, 6th PM, Sections 19 and 20 as available for livestock grazing. This parcel was acquired by the BLM in a land exchange in the 1990's and has not been designated for livestock grazing. Applications would be

accepted and a permittee determined according to the Taylor Grazing Act and 43 CFR 4130.1.

The 1984 RMP estimated the base level of livestock forage to be 39,726 AUMs, which will be refined as monitoring data becomes available. Due to land exchanges and some adjustments in AUMs, this number is not reliable for baseline data.

Monitoring

The BLM will continue to monitor appropriate allotments to determine stocking rates and changes in the new ten-year grazing permits and to continue gathering monitoring data about existing allotments. Currently, the KFO is allowed to use only six monitoring methods: key forage species method (utilization), photo trend, actual use, climatologically studies, canopy coverage method (Daubenmire), and quadrate frequency method. These monitoring methods are all effective, but new/better monitoring methods may become available that would provide results specific to new needs in management. Potential new methods may include line point intercept, gap intercept, soil stability test, belt transect, and other approved BLM monitoring methods.

Livestock use adjustments will be implemented in accordance with 43 CFR 4110.3-3 after acquiring a minimum of two years of rangeland monitoring data, in combination with baseline data. Decisions implementing changes in livestock use will be issued as soon as data are available to support the change. Rangeland monitoring data would be required for adjustments, and any adjustments would result in consultation/coordination with livestock operator.

Allotment management categorization (I, M, C) will be updated as a result of range condition change or support from monitoring data. Currently, allotments are monitored on a priority basis, starting with I, M, and C.

Monitoring will be done as manpower and funding is available. Training for monitoring will be done at the beginning of each year by qualified staff.

Partnerships/Collaboration

The BLM works with the Habitat Partnership Program, Owl Mountain Partnership, private land owners, State Land Board, and the USFS, among others, to help develop and construct cost-effective rangeland improvements and vegetative treatments.

In the 1984 RMP, specific miles of pipeline, fences and other improvements were identified for construction. Due to the changing management needs on rangelands, it is difficult to determine specific improvement numbers. It is more realistic to implement cost-effective rangeland improvement projects. The improvements will include new fence construction, spring development, wells, ditch improvements and construction, pipelines, and other rangeland improvements that may be used to improve rangeland health. In addition, cost-effective vegetative treatments will be implemented throughout the RMP planning area. The vegetative improvements will

involve seedings, burnings, herbicide spraying, brush manipulation, and any other vegetative treatment that can be use to improve the rangeland health. Projects will be built to benefit wildlife, livestock grazing, and other resource concerns.

All vegetation treatments and rangeland improvements are required to go through the NEPA process to determine potential concerns or conflicts. At this time, public and resource staff concern or input would be provided to determine the need of the proposed project.

Grazing plans would be implemented on most allotments. In addition all grazing systems should include an examination of the possibility of providing rest requirements and adjusting season of use for all allotments. The level of detail for each plan will be determined from the management category I, M, and C for that allotment.

2.2.3 Recreation and Visitor Services

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling ROD Updated 1999 (p. 9, 7a) (objective): Ensure the continued availability of outdoor recreational opportunities that the public seeks and that are not readily available from other sources, to reduce the impacts of recreational use on fragile and unique resource values and to provide for visitor safety and resource interpretation.

Management Actions

Kremmling ROD Updated 1999 (p. 9, 7b) (action): Manage recreation resources and activities throughout the KFO planning area.

Kremmling ROD Updated 1999 (p. 9, 7b) (action): The Upper Colorado River and the North Sand Hills would continue to be managed as SRMAs. An activity plan has been completed for the Upper Colorado River SRMA, and an activity plan for the North Sand Hills remains to be written. The Upper Colorado River between Gore Canyon and State Bridge would be managed to provide and maintain floatboating opportunities and associated activities in a roaded natural setting. The North Sand Hills would be managed to protect the cultural resources and the dune environment while allowing OHV use to continue in a roaded natural setting.

Kremmling ROD Updated 1999 (p. 10, 7b) (action): The remaining public lands in the KFO planning area would receive limited management for dispersed recreation use, such as hunting, hiking, and sightseeing.

Kremmling ROD Updated 1999 (p. 10, 7b) (action): Maintain existing recreational facilities in order that they last for their designed life expectancies and so public health and safety are not endangered while on-site.

Kremmling ROD Updated 1999 (p. 10, 7b) (action): Acquire legal access associated with SRMAs to ensure public egress and ingress and to enable more effective and responsive management of the resources and facilities related to the SRMAs.

Kremmling ROD Updated 1999 (p. 10, 7b) (action): Provide maintenance such as trash pickup, fence and parking barrier repair, and occasional visitor contact in dispersed recreation use areas.

2000 Upper Colorado River SRMA Amendment (DR p. 1) (action): The Upper Colorado River SRMA, within the KFO boundary, is expanded to approximately half a mile each side of the Colorado River and is extended approximately seven and a half miles upstream to near Reeder Creek.

2000 Upper Colorado River SRMA Amendment (DR p. 1) (action): Land use priorities are changed for some public lands in the proposed SRMA. Of the 12,237 acres of public land in the SRMA, approximately 8,787 acres are identified as a recreation priority, 2,542 acres as a wildlife priority, 833 acres as a soil priority, 35 acres as a protected area priority, and 40 acres with no priority. In addition, 20.8 miles of the Colorado River and associated tributaries are designated as a water priority. The land use priority definitions, including compatible and excluded uses, are identified in the 1984 RMP.

2000 Upper Colorado River SRMA Amendment (DR p. 1) (stipulation): The existing NSO area for oil and gas development within the river corridor, is expanded to that of the new SRMA boundary. The amendment ensures that any future lands within the SRMA that are acquired by the Federal government will have an NSO stipulation for oil and gas development. There is no effect on these lands unless they are acquired by the federal government.

2000 Upper Colorado River SRMA Amendment (DR p. 1) (action): The amendment identifies the entire 12,237 acres of federal surface estate within the SRMA to be withdrawn from settlement, sale, location, or entry under the general land laws, including the mining laws. It also identified 1,020 acres of private or state land with federal minerals to be withdrawn. The amendment also identifies additional private or state-owned lands within the SRMA to be withdrawn if the lands are ever acquired by the federal government. By including these private lands at this time, they will automatically be withdrawn if acquired by the federal government. There is no affect on the private lands unless they were acquired by the federal government. The legal descriptions for these lands are depicted in the EA Record CO-KRFO-00-02.

1991 Oil and Gas RMP Amendment/ROD (p. 18) (stipulation): KR-05: NSO for North Sand Hills SRMA: Protection of recreational values.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Existing Management

Existing management follows the guidance given in the Kremmling 1984 RMP for recreation. The objectives are as follows:

- Protect and maintain a diversity of outdoor recreation opportunities, activities, and experiences;
- Provide high quality visitor services, including interpretive information;
- Maintain established recreation opportunity spectrum (ROS) classes on implementation of all planned management actions; and
- Ensure maintenance and minimize degradation of existing VRM classes.

Current recreation management also follows the BLM's Priorities for Recreation and Visitor Services published in May 2003 (also known as the Purple Book). There are three primary goals, as follows:

- Goal 1—Improve access to appropriate recreation opportunities on Department of Interior managed or partnered lands and waters;
- Goal 2—Ensure a quality experience and enjoyment of natural and cultural resources on Department of Interior managed or partnered lands and waters; and
- Goal 3: Provide for and receive fair value in recreation.

Specific objectives and actions are described further in this document.

The Upper Colorado River and the North Sand Hills are being managed as SRMAs. The Upper Colorado River SRMA is being managed to provide and maintain floatboating opportunities and associated activities along a 14-mile stretch between Gore Canyon and State Bridge. The North Sand Hills SRMA is being managed to protect the cultural resources and the dune environment while allowing OHV use to continue.

The remainder of the planning area is currently managed as an Extensive Recreation Management Area (ERMA).

Monitoring

User numbers for the Upper Colorado River SRMA is monitored through commercial outfitter year-end reports and an estimation of users through the recreation fee program. User numbers are also estimated for the fishing sites using visitor registers. Resource and use monitoring on the Upper Colorado SRMA is limited to river ranger observations. There is no resource or campsite monitoring plan on the Upper Colorado River SRMA.

Visitor use information is collected throughout the spring, summer, and fall at North Sand Hills. Visitor information for North Sand Hills has been collected through studies by volunteer, internships, and contractor efforts. Other visitor use information has been collected through casual observance with little or no recorded data. In 1991, a visitor use survey was conducted through an internship. A 2004 study was conducted by a Student Career Employment Program participant on what visitors would be willing to pay if fees were introduced at North Sand Hills and what amenities and services they would like to see funded through such fees. Jackson County obtained Great Outdoors Colorado grant funding in 2006 to aid the North Sand Hills Working Group in a management strategy. On the ground surveys and public meetings were conducted as part of this survey effort.

In recent years, the small amount of formal monitoring that has taken place in the ERMA was done through casual observance and road counters. Visitor counts have been taken by seasonal employees within the field in no organized or structured manner, mostly within Grand County during the summer.

Marketing/Interpretation

There are several interpretive panels in different areas around the KFO that provide maps and information on the rules and regulations, seasonal closures, and history of the area for visitors, as follows:

- Upper Colorado SRMA—Pumphouse Campground, with three interpretive kiosks; Radium Campground, with two interpretive kiosks; and the confluence of the Colorado and Blue River, with one interpretive kiosk;
- North Sand Hills SRMA—One permanent interpretive kiosk and one temporary interpretive kiosk; and
- ERMA—Wolford Mountain Travel Management Area (TMA), with four interpretive kiosks, Sidewinder 4x4 Technical Route, with one interpretive kiosk, and Dice Hill, with one interpretive kiosk.

The Wolford Mountain Area kiosks provide brochures with information and regulations of the area and a trail map.

An interpretive sign will be installed in the FY07 for the Fraser River Access Trail in the Strawberry Area. This will provide information on angling opportunities and boundaries of the area.

The McCallum Field Auto Tour is an eleven-mile interpretive drive that winds through one of Colorado's historically significant oil and gas fields. There is an interpretive kiosk, and brochures are available that describe the stops along the route.

Beam Burtcher Grave Site has an interpretive panel and an exclosure completed by the Summit County Boy Scouts. Beam Burtcher was one of the original pioneers in the Williams Fork area.

Independence Mountain Tipi Ring Site has an interpretive panel and an exclosure. This is the largest known concentration of Tipi Rings (rings of rocks used to weight the bottom edge of a tipi structure and are left in place upon removal of the tipi) within the inter mountains (the North Park, Middle Park, South Park and the San Louis Valley) of Colorado.

At the Kremmling Cretaceous Ammonite site, there is an interpretive panel explaining the fossils and geology of the area. This panel also provides visitors with rules of collection, and a brochure includes a map and information on safety and about the site.

On the Upper Colorado River, there is a small interpretive panel explaining the Grand River Cabin.

There are five watchable wildlife sites in the KFO, which are discussed in depth in Chapter 3.

The Upper Colorado River is marketed by the BLM on the Kremmling Web site, by the commercial outfitters who have special recreation permits (SRPs) with BLM, and in river books featuring Colorado's white-water rivers. The Lower Blue River and the Fraser River are also discussed in books featuring Colorado's whitewater rivers. The Upper Colorado River and the Blue River are often described in publications discussing fishing opportunities in the state. The Colorado Headwaters National Scenic Byway features BLM lands and the Colorado River Corridor and is marketed through the National Scenic Byway committee. The BLM has produced a brochure for the Wolford TMA, although this area focuses on community recreation. In January 2007, the Sidewinder Trail got national recognition in *Petersen's 4-Wheel and Off-Road Magazine*, a national publication.

Partnerships/Collaboration Practices

The KFO has several active partnerships.

- A memorandum of understanding (MOU) with Kremmling Chamber of Commerce that establishes a cooperative relationship in hosting annual events on BLM-managed lands in and around the Kremmling area;
- A MOU with North Park Chamber of Commerce to help educate the public and work together in managing the North Sand Hills SRMA and to aid in developing or improving trails and trail systems on BLM-managed lands;
- A MOU with Colorado Department of Wildlife Resources to cooperate in the management and maintenance of the Mugrage Campground and the Radium Recreation Area; and
- A MOU with Mountain Metal Mashers to monitor and maintain the Sidewinder technical 4x4 route in the Wolford Mountain TMA.

The North Sand Hills Working Group is a partnership created in 2005 among the BLM, Jackson County, CDOW, Colorado State Parks, Colorado State FS, The Nature Conservancy, USFS, Colorado State Land Board, and the Colorado Off-Highway Vehicle Coalition to strategize management goals and policy for the North Sand Hills SRMA.

2.2.4 Comprehensive Trails and Travel Management

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling ROD Updated 1999 (p. 11, 9a) (objective): Protect fragile and unique resource values from damage by OHV use and provide OHV use opportunities where appropriate.

Management Actions

Kremmling ROD Updated 1999 (p. 11, 9b) (action): All public lands are designated as open, limited, or closed to OHV use (as shown on the RMP map). Information and supervision will be provided for limited and closed areas.

Kremmling ROD Updated 1999 (p. 11, 9b) (action): Designations are based on protecting public lands resources (e.g., soil, watershed, and vegetation of the pubic lands). Designations are made in accordance with the criteria set forth in 43 CFR Part 8340. Under this plan, 12 percent of the public lands in the KFO planning area are subject to restrictions, with the remaining 88 percent being open, that is, not subject to restrictions. The areas on **Table 2-4** have been limited or closed to OHV use.

Table 2-4
OHV Designations

Area Closure	Limitations	Seasonal
North Sand Hills	Existing roads and trails, open sand areas	N/A
Heron Sloughs	Designated roads and trails	June 1 to August 1
Strawberry	N/A	December 15 to May 1; snowmobiles excepted
Windy Gap	Designated roads and trails	N/A
Sulphur Gulch	Designated roads and trails	Black Mountain road; snowmobiles excepted December 15 to May 1
Lawson Ridge	Existing roads and trails	N/A
Resource Conservation Area	Designated roads and trails	N/A
Dice Hill	Designated roads and trails	N/A
Inspiration Point Flats	4-wheel drive vehicles only, road leading from bench to Colorado River	N/A
Troublesome WSA	Closed to OHVs except as allowed by BLM's Interim Management Policy	N/A

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

Existing Management

In 2005, the Wolford Travel Management Plan was completed with implementation beginning the same year. This area was selected due to its proximity to Kremmling and high use levels of unmanaged motorized travel. This plan designated all routes identified through inventory and public outreach.

The 1988 ORV Implementation Plan designated several areas with travel limitations or designations (**Table 2-4**). While these areas have had designations, they have had implementation, monitoring, and comprehensive management at various levels. Areas with limitations to existing routes have seen route proliferation occur in recent years as motorized recreation increases in popularity.

Monitoring

Seasonal employees monitor visitor numbers for the KFO uplands, such as Wolford Mountain, Dice Hill, and Strawberry. Seasonal visitor monitoring is done mostly on weekends. Visitor numbers that were observed in 2006 by seasonal employees has been recorded for several areas on data sheets. Trail counters were implemented in 2005 within the Wolford Mountain TMA, although the current counters being used have provided inaccurate numbers. Registration boxes have been used for the Gore Put-In, Sunset and Powers fishing sites, and Gore Canyon Trail within the Upper Colorado SRMA.

Marketing/Interpretation

The Wolford Mountain TMA has been promoted for travel management. This area has four kiosks with maps, rules, regulations, and information on the area for visitors. Brochures are also available providing the same information at the KFO, Kremmling Chamber of Commerce, and online through the KFO Web site.

The North Sand Hills has had informal marketing through user group Web forums and Web sites.

A mountain bike map for the Wolford Mountain Area is available at the Kremmling Chamber of Commerce and KFO. However, this trail map is outdated, with some sections of routes now closed to mechanized travel through the Wolford Mountain Travel Management Plan. The Summit County Recreation Guide markets two mountain bike trails within the management area that have not been officially designated or recognized by the BLM. These trails are within Dice Hill and the Williams Fork Mountains access road near Green Mountain Reservoir.

Partnerships/Collaboration Practices

Mountain Metal Mashers – Sidewinder Trail

DOW – monitoring and enforcement

Kremmling Chamber of Commerce

North Park Chamber of Commerce

Partnering and co-sponsoring events and marketing

USFS – SRP permitting

Colorado State Parks

Colorado Off-highway Vehicle Coalition

Stay the Trail Colorado

North Sand Hills working group

2.2.5 Forestry

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling ROD Updated 1999 (p. 9, a) (objective): To manage all productive forest land that is suitable for producing a variety of forest products on a sustained yield basis. This action will create a healthy forest environment through continued forest management practices.

Management Actions

Kremmling ROD Updated 1999 (p. 9, b) (action): Intensively manage approximately 40,000 acres of forest acreage. Maintain and protect the remaining forested lands, composed of approximately 60,000 acres, through limited management practices. The planned actions will emphasize improving forest vigor and growth as well as minimizing losses caused by insects, diseases, or fire.

Kremmling ROD Updated 1999 (p. 9, b) (action): The estimated annual allowable cut will be determined, using the new timber production and operations inventories within the 40,000 acres of intensely managed forest acreage. Intensive management activities could include timber harvesting techniques, artificial regeneration, stand conversion, stand improvement, pre-commercial thinning, and commercial thinning. Limited management activities primarily will involve custodial practices, such as fire protection and salvage. The allowable cut was recalculated in 1992 and adjusted to approximately 2.3 million board-feet per year.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

The forestry program in the KFO manages about 94,000 acres of forest and woodland. The primary commercial species is lodgepole pine, with some Engelmann

spruce and subalpine fir occasionally sold. Commercial timber is sold on either a board foot or cord basis. Special forest products are sold by the individual item and are not measurable in board feet. The most common products are transplants and Christmas trees.

At the present time, the commercial sales are salvage sales in the mountain pine beetle-infested lodgepole pine stands. Virtually all of the lodgepole pine stands in the area are affected by the epidemic of mountain pine beetle, including smaller diameter trees that in the past had not been attacked. The harvesting of the lodgepole pine is being accelerated to harvest as many of the affected trees as possible before the merchantable value as sawlogs is reduced to the point where they are impossible to sell. The markets for firewood have been flooded with the beetle-killed timber, and the value for firewood has been decreasing.

Most salvage sales have been done as thinnings in the past few years but will now mostly be done as clear-cuts due to the lack of good quality smaller trees remaining in stands and to reduce the spread of dwarf mistletoe disease in uncut trees. Clear cutting is the preferred harvest method for regenerating lodgepole pine as it most closely resembles the stand replacing fires in historic conditions. Other cutting methods used for trees larger than 8 inches in diameter include individual tree marking (designating the trees to be cut), diameter limits (specifying a minimum or maximum diameter of the trees to be left), and leave tree marking (designating the trees to remain).

In small diameter lodgepole pine stands where mountain pine beetle and dwarf mistletoe are not significant, thinning for post and pole products will continue. The post and pole market is highly variable and they are often requested for a specific project or need with some diameter requirement. Thinning sales have been prepared in the past several years but the success of selling them has varied depending on market conditions.

Transplants and Christmas trees are sold to individuals and to commercial operators. The primary species for transplants is aspen, while subalpine fir is the preferred species for Christmas trees. These are routinely done as thinnings with a spacing requirement between the trees that remain.

Periodic forest inventories (every 10 to 20 years) of untreated forest stands will be done to monitor growth rates and insect and disease conditions. Reforestation surveys are conducted on treated areas the first, third and fifth year following harvest to determine the regeneration success. If a stand is not adequately regenerated after 5 years the area may need artificial regeneration by planting or seeding.

Thinnings and other timber stand improvement projects may be monitored by periodic remeasurements of treated and untreated permanent plots to compare growth rates.

All timber sale contracts and other treatments are monitored with on-site inspections. A pre-work conference is generally held to familiarize the contractor with the specifications and contract conditions. During operations, periodic inspections are made by the forester to monitor work performance and progress. Slash disposal may be done by lopping and scattering, piling, walking down or roller chopping. Timber haul roads are maintained periodically to assure proper drainage and smooth running surface. New roads may be constructed to access timber stands for treatment. A final inspection is done after completion to assure all required work has been completed in conformance with the specifications.

Forest health and timber stand improvement activities may include sanitation thinning for disease control, pre-commercial thinning of overstocked stands, overstory removal, planting, seeding, stand replacement, prescribed fire, etc.

2.2.6 Lands and Realty

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Ownership Consolidation

Kremmling ROD Updated 1999 (p. 12, a) (objective): Improve the efficiency and effectiveness of public land management by identifying public land suitable for a variety of disposal actions including land sales, exchanges, state selection, interagency boundary adjustments, recreation and public purposes (R&PP) leases or purchases and Section 302 leases. Ownership consolidation will provide a more compact and manageable land base, which would promote a plan-driven, efficient, and effective management of the public lands within the KFO planning area.

Land Acquisition Land Use Priorities EA-Level Amendment 2000 (objective): Land use priorities and management prescriptions are established for fourteen separate parcels of land acquired in the KFO since the original RMP was written in 1984. The land use priority definitions, including compatible and excluded uses are identified in the 1984 RMP. The priorities and prescriptions assigned to each parcel, as well as the parcel locations, are identified in the CO-KRFO-00-03-EA.

Land Acquisition Land Use Priorities EA-Level Amendment 2000 (objective): Land use priorities and management prescriptions for future land acquisitions in the KFO will be identified and established in specific environmental documents prepared for each individual land acquisition.

Management Actions/Land Tenure Decisions

Kremmling ROD Updated 1999 (p. 13, b) (action): Consider all 398,275 acres of public lands administered by the KFO for disposal on a case-by-case basis provided that disposal serves the national interest. All lands may be available for disposal through exchanges, state selections, boundary adjustments, R&PP leases and patents,

and Section 302 leases. However, only those public lands identified as Category II in Appendix 12 of the Final RMP will be considered for disposal by sale under the provisions of Section 203 of FLPMA. Approximately 1,000 acres have been selected by the Colorado State Board of Land Commissioners under Section 7 of the Statehood Act of March 3, 1875. Approximately 1,450 acres have been identified primarily for exchanges, and approximately 2,500 acres have been identified primarily for special disposals, which would be in the public interest and benefit federal and other governmental agencies' management programs. Approximately 14,000 acres have been primarily identified for disposal through land sales. Disposals would require site-specific EAs.

Public lands considered suitable for disposal are as follows:

- Tracts in the Grand Lake, Granby, and Fraser areas that would support or enhance the areas' recreational and tourism based economies;
- Inholdings within large blocks of state or other federal lands;
- Public lands adjacent to large blocks of state or other federal lands that would be best managed by that agency;
- Public lands overlying other mineral estates (state minerals, public surface); and
- Isolated tracts that
    - Have no important wildlife habitat values, such as winter range, nesting areas, and mating areas,
    - Are not within a sensitive watershed or riparian area,
    - Are in areas where BLM-initiated range management opportunities are limited because of size, isolation, and site potential,
    - Are lands where BLM-initiated forest management opportunities are limited because of tract size, stand size, access difficulties, or adverse sites, and
    - Have no resource values of major significance.

Consider all other public lands suitable for disposal on a case-by-case basis when disposal is determined to serve the national interest, however only those lands (approximately 14,000 acres) identified as Category II in Appendix 12 of the Final RMP EIS will be considered for disposal by sale under the provisions of Section 203 of FLPMA.

Acquire lands for public ownership that would benefit overall public land management. Site-specific EAs would consider acquisition needs.

Land that would be considered for acquisition includes the following:

- Inholdings of private, state, or other federal land within large blocks of public lands;
- Land adjacent to intensively managed tracts of public land where overall program management would be enhanced, such as lands adjacent to SRMAs, intensively managed forest sites, grazing allotments, and important mineral areas; and
- Lands of mineral importance where the federal minerals are overlain by state or private surface ownerships.

Refer to Ownership Consolidation-Land Tenure Adjustment in Appendix C of ROD.

Desired Outcomes/Goals and Objectives

Realty

Kremmling ROD Updated 1999 (p. 14, a) (objective): Provide the opportunity to use public lands for development of facilities that benefit the public, while considering environmental and agency concerns.

Management Actions

Kremmling ROD Updated 1999 (p. 14, b) (action): Process and approve small-scale, low impact use authorization requests if applications meet the requirements under the law, placement on or use of public lands was the most suitable economically and environmentally, and actions support private or governmental needs on a local basis.

Process and approve major realty actions if the above criteria are met and the projects would not adversely affect or conflict with existing uses or management of renewable resources. The placement of major linear realty action would depend on meeting the following location criteria.

- Concentrate linear facilities within or contiguous to existing corridors where possible;
- Avoid locations that would take intensively managed forest land out of production;
- Avoid locations that would harass livestock or wildlife;
- Avoid steep topography, poor soils, or other fragile areas, such as threatened and endangered habitats; and
- Avoid cultural sites that are listed on or eligible for listing the NRHP.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

The 1984 KFO RMP contained an Ownership Consolidation/Land Tenure Adjustment Table which has been consistently updated. However, there have been

many changes in land ownership since the last RMP. For the revision, the KFO will be developing criteria for considering land exchanges, sales, etc, rather than compiling a list of parcels.

2.2.7 Transportation Facilities and Access

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives:
Kremmling ROD Updated 1999 (p. 14, 13, a) (objective): Provide access to allow multiple use management of public lands.

Management Actions:
Kremmling ROD Updated 1999 (p. 14, 13, b) (action): Prepare transportation plan identifying road closures, maintenance needs, and access needs. Acquire access to the following public lands: Troublesome East and West, Canyon Creek, Drowsy Water Creek, Smith Creek, Willow Creek, Muddy Pass/Bear Mountain/Diamond Mountain/Iron Clad Mountain/Spicer Peak, Sheep Mountain, Bradfield Ditch, North Sand Hills, Upper Colorado River, McFarlane Reservoir, Colorado River (Middle Park), Pitchpine Mountain, Battleship Oil Field, and San Toy Mountain.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

The KFO has many areas that have had access and transportation levels designated in some manner to protect resources and to provide for public access and quality recreation (see Travel Management section in Chapter 3). These areas are monitored when a field presence is available through seasonal labor, patrol by law enforcement, or specialist field work in such areas. Additional monitoring efforts have been made in some areas through visitor counts and road counters in the past year.

Currently, the KFO markets the transportation network in the Wolford Mountain Area only through kiosks, brochures, and maps available through the Internet. This area has undergone travel management with route designation. Areas that receive interpretation in regard to transportation include the Wolford Mountain Area and North Sand Hills SRMA through kiosks. Partnerships and collaboration of these areas have been produced with the Kremmling Area and North Park Area Chambers of Commerce, for these areas in their respective counties to support in interpretation and promotion.

The public has access to the North Sand Hills, small sections of the Colorado River in Middle Park, and the Battleship Oil Field via county roads and through land exchanges.

2.2.8 Renewable Energy

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

There are no RMP, amendments, and activity-level plans that discuss wind and solar renewable energy.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

IM WO-No. 2006-216 was issued for the ROD of the Programmatic EIS on Wind Energy Development. The EIS contained guidance on processing ROW applications for wind energy projects on BLM-administered public lands. It is BLM policy, consistent with the National Energy Policy of 2001 and the Energy Policy Act of 2005, to encourage development of wind energy in acceptable areas. The revision will incorporate BMPs from the EIS and consider areas for acceptable wind energy development.

IM WO-No. 2007-97 was issued for Solar Energy Policy. The Department of Energy's National Renewable Energy Lab has prepared solar insulation potential maps at the request of the specific BLM states. The maps identify areas with one percent or less slope with high levels of solar insulation that have potential for commercial solar energy development. To date, Colorado BLM has not requested the maps. The KFO will determine if the maps for Colorado have been prepared and utilize any additional information from NREL. The revision will also address potential impacts of solar energy development and related environmental and local community issues.

2.3 SPECIAL DESIGNATIONS

2.3.1 Areas of Critical Environmental Concern

A. Relevant Plans and Amendments

Management Actions:

Kremmling ROD Updated 1999 (p. v, 2) (action): The Kremmling Cretaceous Ammonite site, a significant marine invertebrate fossil location north of Kremmling, is designated as an RNA with the signing of this document.

Kremmling ROD Updated 1999 (p. v, 7) (action): The North Park Phacelia Site, which provides critical habitat for *Phacelia formosuld*, a federally listed endangered plant species, is designated as an RNA with the signing of this document.

1991 Oil and Gas RMP Amendment/ROD (p. 18) (stipulation): KR-01: NSO for Kremmling Cretaceous Ammonite ACEC/RNA: Protection of ammonite fossils.

1991 Oil and Gas RMP Amendment/ROD (p. 18) (stipulation): KR-02: NSO for North Park Phacelia ACEC/RNA: Protection of a known endangered plant species.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

The North Park Phacelia RNA ACEC (300 acres) is monitored every year through the Owl Mountain Partnership. A monitoring report is prepared each year which details collected plant counts of all known populations of the Phacelia formosula species and GPS's their locations on BLM lands. The monitoring program constitutes the largest extent of the existing management. There are no roads or trails which enter the ACEC boundary, thus there is little to no visitation by the public. The ACEC is within allotment # 07116, which is grazed by 33 pairs from 5/30 to 7/6.

The Kremmling Cretaceous Ammonite ACEC/RNA (160 acres) is managed for scientific and educational purposes (Kremmling Resource Area Management Plan/Environmental Impact Statement (RMP-EIS), Vol. 3., Ch. 4, pg. 147). The ACEC provides, in the long term, opportunities for the professional study of Placenticeras meeki, other later Cretaceous marine species, geology, oceanic and climatic changes, and evolutionary changes. Due to its designation, the ACEC allows for public use and enjoyment, while protecting the site from casual collecting activities from May 30 to June 7.

For the Kremmling Cretaceous Ammonite ACEC/RNA, visitor use can only be partially documented. Visitor use counts were only informally started in 1989, with a more formal tracking system initiated in 1995. Informal tracking from 1989 to 1994 indicated that visitors to the site averaged approximately 50 per year. Use was primarily escorted visits from local High School and Middle School geology classes with supervision provided by the KFO archaeologist and teachers.

In 1995, there were 78 visitors who requested information about accessing the site. In 1996, there were thirty eight visitors who requested information. Requests were primarily made in person, although requests were also honored through the mail and by phone. Of the total of known visitors for 1995 and 1996 (116 visitors), 70 (60%) were students accompanied by a teacher/professor. The remainder would be considered general public visitors with an avocational interest in geology and paleontology. All visitors to the site must go to some degree of effort to seek out and find this rather remote location.

It is noted that while visitor use has shown only a very modest increase, there has been a change in the types of visitors. In the years 1989 through 1994, visitor use was primarily from local grade schools. Beginning in 1995, visitors were primarily university students and avocational recreationalists. Locals and others who know that ACEC location do not request access information, and it is unknown how many of these visitors use the site yearly.

The inclusion of the ACEC in two book publications has stimulated much of the recent interest from the avocational community (Voynick 1994 and Skwara 1990).

The KFO archaeologist worked closely with both authors, and to their credit, they did not provide explicit directions to the site. Rather, they are referred to the KFO to obtain information and directions. As a result, the majority of avocational visitors to the ACEC are required to contact the KFO office to obtain maps and other information. This provides an opportunity to discuss the protected status of the site, track visitor use and provide some cautions regarding safety.

In addition, the ACEC has been published in professional journals and avocational newsletters (Kennedy et al 1996; Young 1996; Johnson 1999, Cobban et al. 1992), etc.

Interest in fossils and paleontology has been greatly stimulated in recent years due in part to the popularity of Dinosaurs, as evidenced by numerous recent movies, articles, books, museum exhibits and paleontology certification courses. Increasing interest has brought new avocational and professional visitors to the field to visit known fossil locations, and increased exploration to discover new fossil localities. This has in turn increased agency concern for potential impacts to the resource from vandalism and theft. Increased interest has also brought about an increase in the availability and monetary value of fossils for sale by the commercial sector. Many of the fossil specimens are obtained legally from out-of-country and private land sources, but many specimens are collected illegally from Public Lands for their commercial value. This is a concern at the ACEC because many of the fossil Ammonites and Baculites are located at or near the surface, and can be collected with relative ease. Additionally, the site is remote and only occasionally patrolled, increasing the vulnerability of the site to illegal activities. Renewed interest also has a positive effect in that it provides stimulus for paleontology students to pursue their interests into fossil domains such as the Late Cretaceous Period.

For the North Park Phacelia ACEC, visitor use is minimal as there are no roads or trails that access the site.

2.3.2 Wilderness Study Areas

A. Relevant Plans and Amendments

Desired Outcomes/Goals and Objectives

Kremmling ROD Updated 1999 (p. 10, 8a) (objective): Recommend the Troublesome WSA for non-wilderness designation and manage the approximately 8,250 acres under BLM interim management policies for WSAs until completion of the wilderness review process.

Management Actions

Kremmling ROD Updated 1999 (p. 11, 8b) (action): Interim management policies and guidance as defined in BLM's Interim Management Policy and Guidelines for Lands Under Wilderness Review will be applied to the Troublesome WSA. These Guidelines have been developed under Section 603 of FLPMA "so as not to impair the suitability of such areas for preservation as wilderness", until Congress makes its decision on whether or not to designate the area as wilderness.

Kremmling ROD Updated 1999 (p. 11, 8b) (action): Planned projects in the Troublesome WSA will be evaluated to ensure compliance with interim management policy. The WSA will be patrolled periodically to detect and prevent unauthorized actions. Routine checks will be conducted in conjunction with other activities.

Kremmling ROD Updated 1999 (p. 11, 8b) (action): A separate EIS and Study Report will be prepared and submitted to the Secretary of the Interior who will forward the final recommendations to the President. If the non-wilderness recommendation presented in the Final RMP is adopted, then the area will be managed for multiple use, with emphasis on intensive forest management and continued range management for livestock.

B. Existing Management, Monitoring, Marketing, Interpretation, and Partnerships/Collaboration Practices

The **Troublesome WSA** was recommended as unsuitable for wilderness designation in the RMP. It will be managed under BLM interim management policies for WSAs until Congress has reached a decision on its final status. If Congress does not designate the Troublesome as wilderness, it will be managed for backcountry experiences, primarily nonmotorized use due to its location and primitive character and the fact that it is adjacent to the USFS Troublesome Roadless Area.

On September 13, 2006, the BLM instituted a temporary road and area closure in the Troublesome area, in accordance with title 43 CFR 9268.3(d) (1) *Closure of Lands (i) (ii) (iii) (iv) (v)*. This action was due to resource damage from a number of new user-created motorized access routes near the Bighorn Park Subdivision, in the buffer area along the western perimeter of the WSA, and route incursions into the WSA itself. This temporary closure includes all BLM public lands adjacent to the Troublesome WSA, south to State Land Board lands south of the Bighorn Park Subdivision.

The **Platte River Contiguous WSA** (30 acres) is about 18 miles north of Walden in Jackson County, Colorado. The WSA includes about a quarter mile of the North Gate Canyon of the North Platte River and that portion of the canyon's rim that is part of the viewshed of the adjacent Platte River Wilderness. The Platte River Contiguous WSA was monitored in 2006. Monitoring will continue under the current program manager in conjunction with the North Sand Hills WSA monitoring.

The **North Sand Hills Natural Area Instant Study Area WSA** (671 acres) is about 10.5 miles northeast of Walden in Jackson County, Colorado. An Instant Study Area is one of the three categories of WSAs, specifically an area formally identified before November 1, 1975, as natural or primitive. Section 603 (a) of FLPMA directed that "the Secretary of the Interior shall report to the President by July 1, 1980, his recommendations on those areas which the Secretary has before November 1, 1975, formally identified as natural or primitive area."

Section 603(c) states that "During the period of review of these areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness…."

In response to Section 603(a) of FLPMA, the BLM Craig District inventoried the North Sand Hills RNA (also known as the North Sand Dunes) to determine if it possessed wilderness characteristics. The inventory was completed in 1979 and concluded that the area did not meet the wilderness criteria set forth in the Wilderness Act of 1964. Specifically, the area did not meet the size requirement, was not natural within the context of wilderness requirements, and did not offer outstanding opportunities for solitude or primitive and unconfined types of recreation.

This recommendation was then included in BLM Colorado's completed review of the public lands under the authority of Section 603 of FLPMA in 1980. However, it did not change the designation of the North Sand Hills as an Instant Study Area. Thus, the area had to be managed according to BLM interim management policy and guidelines for lands under wilderness review.

The Colorado interim management policy stated that "It is the policy of BLM in Colorado to preserve the character of areas which contain roadless and wilderness characteristics while continuing multiple use activities to the extent possible. This policy will continue until (b) <u>an identified wilderness study area is declared unsuitable for wilderness by Congress</u> (emphasis added, IM CO-78-27)."

Since the North Sand Hills was an "identified wilderness study area" it had to be managed under the BLM interim management policy (H-8550-1, Interim Management Policy and Guidelines for Lands under Wilderness Review, December 12, 1979). Only Congress can designate an area as wilderness, and only Congress can release areas from interim management that were placed under wilderness consideration by FLPMA.

In 1984, the KFO completed its RMP, which was silent on the North Sand Hills Instant Study Area. In the Proposed RMP/Final EIS the following was stated regarding the wilderness review process (p. 44): "In Section 603 of FLPMA, BLM was directed to review all wilderness areas of 5,000 acres or more for their wilderness potential. Those areas having wilderness characteristics as defined in the Wilderness

Act of 1964 were to be studied to determine their suitability or non-suitability for preservation as wilderness."

The Proposed RMP/Final EIS failed to mention that Section 603 of FLPMA also mandated the BLM to review those areas that the Secretary of the Interior, before November 1, 1975, formally identified as natural or primitive. Thus, there was no mention of the North Sand Hills Instant Study Area, either because it was assumed that the 1980 recommendation released it from its designation and interim management or that it was overlooked. To date, the North Sand Hills Instant Study Area has not been released by Congress, thus it has to be managed under the BLM interim management policy (H-8550-1).

The North Sand Hills is currently being managed to protect the cultural resources and dune environment, while allowing OHV use to continue in a roaded natural setting.

2.3.3 Wild and Scenic Rivers

A WSR study was not completed for the KFO during the 1984 RMP. This study is being conducted as part of the revision.

Updated Decision Guidance (Land Use Planning Handbook Appendix C, III. Special Designations, B. Administrative Designations, p. 27) Assess all eligible river segments and determine which are suitable or unsuitable per Section 5(d)(1) of the WSR Act of 1968, as amended (see BLM Manual 8351).

2.3.4 Backcountry Byways/National Trails

There are no designated Backcountry Byways in the planning area. There is a small section of BLM land being considered for development as part of the Continental Divide National Scenic Trail System. Currently, Continental Divide Trail users hike along County Road 53, which bisects public land. This is utilized to get to the next designated portion of the trail. The Colorado River Headwaters National Scenic Byway bisects a large portion of the planning area following the Colorado River from Grand Lake through to State Bridge.

2.4 SOCIAL AND ECONOMIC

2.4.1 Social and Economic Conditions

In the 1984 RMP, the BLM did not specifically address management objectives for social and economic conditions.

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CHAPTER 3
AREA PROFILE

The area profile describes the social, economic, physical and biological environment of the planning area. It includes descriptions of the current amount, location, condition and use of each resource, placing emphasis on resources that would be affected by management changes proposed in this document. This section of the AMS will be used as the basis of the affected environment section of the RMP/EIS. The area profile addresses all resources and resource uses in the RMP planning area.

This chapter is separated into resources and resources uses. Under resources, the subsections include current conditions and characterizations (indicators, trends, and forecasts). Under resource uses, the subsections include current level of use and characterizations (trends, forecasts, and key features). Indicators are used to assess the resource condition. Trends express the direction of change between the present and some point in the future. Forecasts predict changes in the condition of resources given current management. Key features describe the areas with a high potential for use.

3.1 RESOURCES - CURRENT CONDITIONS AND CHARACTERIZATION

3.1.1 Air Quality

A. Current Condition

The US EPA and the State Air Quality Control Commission have established ambient air quality standards for criteria air pollutants, including carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than or equal to 10 micrometers in size (PM_{10}), particulate matter less than or equal to 2.5 micrometers in size ($PM_{2.5}$), ozone, and lead. Ozone is typically not emitted directly from emission sources, but at ground level it is created by a chemical reaction between ozone precursors, including oxides of nitrogen and volatile organic compounds. Therefore, the US EPA regulates emissions of volatile organic compounds. The US EPA classifies all locations in the US as attainment (including

unclassified), nonattainment, or maintenance areas with respect to National Ambient Air Quality Standards (NAAQS). These classifications are determined by comparing actual monitored air pollutant concentrations to their applicable federal standards.

The KFO planning area is considered to have good air quality, as there are no areas of nonattainment of NAAQS in the state. Pollutants are primarily particulates associated with wood-burning stoves/fireplaces and sanding of roads associated with mountain communities in tight mountain valleys (Colorado Air Quality Data Report 2005). Sites that represent mountain communities include two that are geographically near to the planning area (Steamboat Springs to the west and Breckenridge to the south). In 2004, there were no areas exceeding the ambient air quality standards (AAQS) in Colorado. The state's two exceedances in 2005 were both in mountain communities for PM_{10}. Fugitive dust is one source of PM_{10}, and is wind-blown sand and dirt from open sites and roads. Smaller particulates are from vehicles, and fireplaces/woodstoves. These particulates have the potential for long-range transport and may affect visibility, health, vegetation, and climate change. $PM_{2.5}$ describes the fine particles that are less than or equal to 2.5 micrometers in diameter. Coarse refers to particles greater than 2.5, but less than or equal to 10, micrometers in diameter. Fine particulate matter is composed mostly of secondary particles, and coarse particulate matter is composed largely of primary particles.

At the time of the 1984 RMP, tepee burners still operated in Fraser, Granby, Kremmling, and Walden. Since then, the larger sawmills in Walden and Kremmling have shut down. The operators at the Kremmling sawmill removed the tepee burner and temporarily operated a wafer wood plant during the 1980s. There are two privately operated sawmills in the east end of the county that do some open burning, and an air curtain burner accepts and incinerates woody debris at the sawmill just north of Windy Gap Reservoir. Woodstoves within town limits have decreased as most of the towns now have natural gas available for heating. The number of homes outside of town limits has increased, however, and wood stoves or fireplaces often provide at least one source of heat.

Due to the mountain pine beetle epidemic, there are currently 7,000 slash piles permitted within Grand County alone. With the high number of beetle killed trees, this number will probably remain high for several more years in Summit, Grand, and Jackson counties.

The North Park High School uses biofuels to heat the Vo-Ag building in Walden, and there is one private sawmill north of town that burns. Mountain Parks Electric is currently investigating using this sawmill as a site of another biofuel project to generate heat. The McCallum, South McCallum, and Dwinell oil fields are still operating to the north-northeast of Walden, as is a carbon dioxide (CO_2) plant. There is also some oil and gas activity to the west of Walden in the Lone Pine unit and exploratory drilling for coal bed methane has begun near Coalmont (at least two companies having drilled some test wells on private lands).

The KFO planning area is bounded by four Class 1 air quality areas (**Table 3-1**) (Map 5–Class 1 (Air Quality) Federal Land Areas, **Appendix G**), including Rocky Mountain National Park and three Wilderness Areas: Rawah, Eagle's Nest, and Mount Zirkel. Class 1 areas are classified as having air quality better than the National ambient standards and are managed to prevent significant deterioration, allowing only minor increases in sulfur dioxide or total suspended particulates. At the time of the RMP, additional Class 1 designations were proposed for other Wilderness Areas, but these were not passed. The Clean Air Amendment of 1990 extends Class 1 designations to amended or expanded acreages of existing Class 1 areas, so the total acreages are:

Table 3-1
Class 1 Air Quality Areas

Class 1 Air Quality Area	Acreage
Eagles Nest Wilderness Area	133,910 acres
Mount Zirkel Wilderness Area	104,972 acres*
Rawah Wilderness Area	76,394 acres*
Rocky Mountain National Park	263,128 acres

*expanded Class 1 acreage after the 1984 RMP

The predominant wind flow into the Rocky Mountain National Park is westerly, with air masses coming from the northwest or to a lesser extent, from the southwest. Preliminary data suggests that upslope conditions (from the east-northeast) result in the highest nitrate concentrations and deposition. The highest concentrations of particulate sulfur and sulfate in precipitation are also from easterly air flow. Westerly sources cannot be ignored, however, due to the much higher frequency and cumulative contributions to measured concentrations. The 2005 study recommended monitoring stations outside of the Rocky Mountain National Park including Brush, Two Buttes Nebraska, and Dinosaur National Monument, as they represent major transport routes into Rocky Mountain National Park.

In recent years, there have been increasing concerns about potential air quality impacts occurring in Rocky Mountain National Park. The Rocky Mountain National Park Initiative was formed to study and recommend action on air quality issues facing the park. Participants in the initiative include the Colorado Department of Public Health and Environment Air Pollution Control Division, US EPA Region 8 Air Program, the Air Resources Division of the NPS and the USFS. "Airborne nitrate and sulfate particles contribute to visibility degradation in the park, while nitrogen deposition is producing changes in ecosystem function and surface water chemistry" (Collet et al. 2006). Current loadings of 3.1 kgN/ha/yr (for a five-year average of 2000-2004 wet deposition data) have been monitored at the Loch Vale watershed on the east side of the Park. Total nitrogen deposition (wet and dry) is estimated at 4.0 kgN/ha/yr over the past five years. These levels of deposition are 15-20 times greater than the estimated natural background level of around 0.2 kg N/ha/yr nitrogen deposition. Measured levels of nitrogen deposition have also been

increasing at about 2.5% per year over the past two decades as documented by the park's on-site monitoring program. The Rocky Mountain National Park estimates that the critical threshold is 1.5 kgN/ha/yr. This is similar to measurements on the west side of the Rocky Mountain National Park where the ecological processes are considered to be relatively natural and not eutrophic.

B. Characterization

Indicators

There are six criteria pollutants which are federally established as AAQS in the Federal Clean Air Act, amended. In Colorado, the mountain communities' monitoring sites representative of the KFO planning area's general air quality generally only monitor for particulate matters (**Table 3-2**).

Table 3-2
Criteria Pollutants in the Federal Clean Air Act from Colorado Air Quality Data Report, 2005

Pollutant	Averaging Time	Concentration	Monitoring Site, 2005
Carbon Monoxide			Grand Junction
Primary	1- hour	35 ppm	2.8 ppm max.*
Primary	8- hour	9 ppm	2.0 ppm max.
Ozone			
Primary	8 – hour	0.08 ppm	
Secondary	Same as primary		
Nitrogen Dioxide			
Primary	Annual arithmetic mean	0.053 ppm	
Secondary	Same as primary		
Sulfur Dioxide			
Primary	Annual arithmetic mean	0.03 ppm	
Primary	24-hour	0.14 ppm	
Secondary	3-hour	0.5 ppm	
Particulate Matter (PM_{10})			Steamboat Springs
Primary	Annual arithmetic mean	50 ug/m^3	22.0 ug/m^3 annual avg
Primary	24-hour	150 ug/m^3	86 ug/m^3 24-hr max.
Particulate Matter ($PM_{2.5}$)			Steamboat Springs
Primary	Annual arithmetic mean	15 ug/m^3	6.28 ug/m^3*
Primary	24- hour	65 ug/m^3	12.6 ug/m^3
Lead			Leadville
Primary	Calendar quarter	1.5 ug/m^3	0.02 ug/m^3 max. qtr

* less than 75% data for one or more quarters.

Visibility

The IMPROVE (Interagency Monitoring of Protected Visual Environments) program was established to measure visibility impairment in mandatory Class I areas throughout the US. The monitoring sites are operated and maintained through a formal cooperative relationship between the US EPA, NPS, USFWS, BLM, and USFS. The program objectives are to:

- Establish current visibility and aerosol conditions in mandatory Class I areas;
- Identify chemical species and emission sources responsible for existing human-made visibility impairment;
- Document long-term trends for assessing progress towards the national visibility goals; and
- With the enactment of the Regional Haze Rule, to provide regional haze monitoring representing all visibility-protected federal Class I areas where practical.

Visibility impairment in the form of regional haze obscures the clarity, color, texture and form of what can be seen. Regional Haze Regulations were developed under 40 CFR §51.308(d)(2)(i) to maintain visibility on the least impaired days and improve visibility on the most impaired days in mandatory Federal Class I areas across the US.

Perceived changes in visibility are measured in terms of deciviews. One deciview is defined as a change in visibility that is just perceptible to an average person, about a 10 percent change in light extinction. Without human-caused visibility impairment, natural visual range is estimated to average about 8 deciviews (visual range of about 110 to 115 miles) in the western US (Malm 1999).

IMPROVE monitoring stations in Rocky Mountain National Park and Mount Zirkel Wilderness Area record visibility conditions annually. Conditions are reported in three categories ranked from clearest to haziest at each monitoring station. No significant deterioration of visibility in Rocky Mountain National Park and Mount Zirkel Wilderness is apparent from the data (**Table 3-3**).

Table 3-3
Recorded Visibility Conditions in Adjacent Class 1 Areas

Visibility Measurement	Rocky Mountain National Park (east of Resource Area, station on east slope)	Mount Zirkel Wilderness Area (west of Resource Area)
20 percent clearest[2]	4 – 6 deciview (162 – 133 miles)	3 – 5 deciview (180 – 147 miles)
Average[3]	8 – 10 deciview (109 – 89 miles)	6 – 9 deciview (133 – 99 miles)
20 percent haziest[4]	12 – 14 deciview (73 – 60 miles)	10 –12 deciview (84 – 73 miles)

Deciview numbers are inversely related to visual range (miles), with the largest visual range being the smallest deciview.
[2] Mean visibility for the 20 percent of days with the best visibility
[3] The annual mean visibility
[4] Mean visibility for the 20 percent of days with the poorest visibility

At the Rocky Mountain National Park IMPROVE site, baseline visibility is determined from on-site IMPROVE monitoring data for the 20 percent best and the 20 percent worst days for the years 2000 through 2004, as specified in the Regional

Haze regulations under 40 CFR §51.308(d)(2)(i). The baseline visibility for Rocky Mountain National Park is calculated at 2.3 deciviews for the 20 percent best days and 13.8 deciviews for the 20 percent worst days. The natural visibility for the Rocky Mountain National Park is 1.9 deciviews for the 20 percent best days and 7.1 deciviews for the 20 percent worst days. The majority of worst days appear in the second and third quarters when fires, dust events, and photochemical processes maximize organic and elemental readings, as well as elevating secondary particulate formation.

Climate

The average maximum temperatures occur in July, whereas average minimum temperatures typically occur in January. Average total precipitation ranges from 11 inches in the town of Walden to 20 inches in the town of Grand Lake. The town of Kremmling receives an average annual precipitation at just over 11 inches. The largest average total snowfall and snow depths typically occur in December and January. Based on its 28-year record, Willow Creek Pass (across the continental divide in the Rabbit Ears Range along the border between Jackson County [to the north] and Grand County [to the south]) receives a mean annual precipitation of 13 inches, with average maximum precipitation (25 inches) occurring in September and average minimum precipitation (near zero) occurring in October.

Trends/Forecast

There is considerable interest in the communities within the planning area to pursue additional biofuel projects. To help reduce the fire danger and to dispose of large quantities of forest products, many different alternatives and ventures are being discussed. The availability of firewood and the increasing cost of other fuels may also reverse the trend of less woodburning within the towns, although current stoves are more efficient than those in the past, and include pellet stoves.

It appears that there could be an increase in energy development in the North Park area, although the actual degree of development is uncertain at this time. The BLM will continue to adhere to the state's smoke management requirements, and any future requirements pertaining to oil and gas industry emissions. Air pollution movement into the planning area would continue to be the larger factor in air quality, rather than localized generation of pollution. The future impacts to air quality from non-BLM sources are uncertain.

Ongoing scientific research has identified the potential effects of greenhouse gas emissions (including carbon dioxide, methane, nitrous oxide, water vapor, and several trace gasses) on global climate. Through complex interactions on a regional and global scale, these greenhouse gas emissions cause a net warming effect of the atmosphere, making surface temperatures suitable for life on earth, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although greenhouse gas levels have varied for millennia, with corresponding variations in climatic conditions, recent industrialization and burning of fossil carbon sources have caused carbon dioxide concentrations to increase dramatically, and are

likely to contribute to overall climatic changes, typically referred to as global warming. Increasing carbon dioxide concentrations also lead to preferential fertilization and growth of specific plant species.

The assessment of greenhouse gas emissions and climate change is in its formative phase, and it is not yet possible to know with confidence the net impact to climate. Observed climatic changes may be caused by greenhouse gas emissions or may reflect natural fluctuations, but the Intergovernmental Panel on Climate Change (2007) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [man-made] greenhouse gas concentrations."

Global mean surface temperatures have increased nearly 1.0 degree Celsius (1.8 degrees Fahrenheit) from 1890 to 2006 (Goddard Institute for Space Studies 2007). However, both observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere.

In 2001, the Intergovernmental Panel on Climate Change indicated that by the year 2100, global average surface temperatures will rise 1.4 to 5.8 degrees Celsius (2.5 to 10.4 degrees Fahrenheit) above 1990 levels. The National Academy of Sciences (2006) has confirmed these findings, but also indicated there are uncertainties how climate change will affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be higher than during the summer.

3.1.2 Geology

The geologic units within the KFO are discussed under the Paleontology section 3.1.10 and in **Appendix E**.

3.1.3 Soil Resources

A. Current Conditions

At the time of the RMP, only the Larimer, Jackson, and Summit County soils surveys had been published by the National Resource Conservation Service (formerly the Soil Conservation Service). Since then, the Grand and Eagle Surveys (in the Aspen-Gypsum Survey) have been published. The five counties have over 200 soil mapping units, which makes summarizing rather difficult. To look at the entire KFO, range sites give a better summary of soils (see **Table 3-4** and Map 6–Soils with a K-Factor of 0.37 or Greater, **Appendix G**).

Table 3-4
Summary of Soils on KFO Lands

	Eagle County	Grand County	Jackson County	Larimer County	Summit County	Total
Important Range Sites or Soil Mapping Units	Torriorthents-Camborthids-Rock Outcrop Complex: *25 percent* Brushy Loam/Stony Loam: *12 percent* Pinyon/Juniper: *12 percent* Mountain Meadow: *trace*	Woodlands: *32 percent* Mountain Loam: *12 percent* Dry Exposure: *10 percent* Subalpine Loam: *1 percent* Cryaquolls: *1.4 percent*	Dry Mountain Loam/Valley Bench: *27 percent* Woodlands: *13 percent* Dry Exposure: *9 percent* Salt Flats: *5 percent* Mountain Meadow: *1.2 percent* Dune: *0.2 percent* Playa: *0.2 percent*	Dry Mountain Loam: *20 percent* Woodland: *17 percent* Rocky Loams: *17 percent* Mountain Loam: *13 percent* Subalpine Loam: *12 percent* Mountain Shales: *8 percent* Mountain Meadow: *1 percent*	Mountain Loam: *46 percent* Mountain Shales: *31 percent* Dry Mountain Loam: *2 percent* Cryaquolls: *1.5 percent*	Not Applicable
Soils with k factors = 0.37 or greater (indicator of erosivity)	1,874 acres *6 percent*	15,021 acres *8 percent*	1,252 acres *0.7 percent*	4,594 acres *16 percent* (>= 0.32)	323 acres *42 percent*	23, 064 acres *6 percent*
Hydrologic Soil Group (associated with production of runoff)	B= 27 percent C/B= 22 percent D/rock= 33 percent	A= 2 percent B= 50 percent C= 9 percent D= 7 percent	A= 2 percent B= 51 percent C= 8 percent D= 18 percent B/A= 5 percent	A= 4 percent B= 35 percent C= 8 percent D= 34 percent C/rock= 7 percent	B= 3 percent C= 13 percent D= 11 percent C/rock= 5 percent	Not Applicable
NRCS Highly Erodible Soils	NRCS worksheet has not been located.	Wind Erosion: *17 percent* Water Erosion: *38 percent*	Wind Erosion: *36 percent* Water Erosion: *11 percent*	Wind Erosion: *77 percent* Water Erosion: *11 percent*	Wind Erosion: *33 percent* Water Erosion: *2 percent*	Wind Erosion: *31 percent+* Water Erosion: *22 percent+*

Table 3-4
Summary of Soils on KFO Lands *(continued)*

	Eagle County	Grand County	Jackson County	Larimer County	Summit County	Total
Prime Farmland	None	None	None	*	None	Not Applicable

+ not including Eagle County
*Prime farmlands are primarily located on private land along the Laramie River floodplain, Jenkins/Little Jenkins Creeks, and Trollop/Jimmy Creeks. No public lands are believed to have prime farmlands.

B. Characterization

The BLM-administered public land soils include many areas of low productivity, including rock outcrops, steep slopes, and harsh exposures. The public lands tend to have many areas of naturally poor ground cover and higher erosion rates, and land uses can cause significant soil erosion. BMPs for livestock grazing have improved the overall vegetative conditions in the KFO, which maintains soil health on a landscape scale. Upland soil improvements are generally long-term and difficult to perceive due to the cold soil temperatures and fairly xeric moisture regimes in the rangeland areas. From the limited North Park studies, the soils between grazed and ungrazed areas had similar mycorrhizal populations. Although nitrogen fertilizers and chemical herbicides affected populations, it appears to be short term, with populations able to rebound after a few years.

Indicators

As stated in Chapter 2 under Soils, the following indicators are used in evaluating land health standards related to soils (Standard 1 – Upland Soils):

- Expression of rills, soil pedestals is minimal;
- Evidence of actively eroding gullies (incised channels) is minimal;
- Canopy and ground cover are appropriate;
- There is litter accumulating in place and is not sorted by normal overland water flow;
- There is appropriate organic matter in soil;
- There is diversity of plant species with a variety of root depths;
- Upland swales have vegetation cover or density greater than that of adjacent uplands; and
- There are vigorous desirable plants.

To date, approximately 236,161 acres have been assessed for land health standards. The KFO uses an interdisciplinary team to evaluate the grazing allotments in the field. Of those evaluated, 7,083 acres (2.99 percent) have been assessed as not meeting the Upland Soil Health standard (Standard 1). About a quarter of the acres not meeting Standard 1 failed due to historic vegetation manipulations, including

disking. In addition to the soil disturbance, it appears that historic treatments were not (in general) properly managed afterwards. Post treatment, livestock numbers were often increased and rest was not required. Any benefits from the treatments have been lost over time, and soil erosion is higher than in untreated sites. The acres failing Standard 1 have had various restorative actions taken, including rest, exclusion from grazing, seeding, and in one case, soil amendments.

Trends

At the time of the RMP, the KFO's lands were primarily used by permitted users: livestock permittees, energy developers, loggers, and utilities. Changing historic season long grazing, especially with early turnout dates to accommodate private irrigation, was a major focus, using range projects and grazing plans to improve allotments. Other soil concerns were focused on reducing impacts with adequate project design and reclamation. Roads and trails were mostly user created except in timbered areas, and the only times of heavy use were during the hunting season.

Due to the increasing populations, both locally and nationally, public lands within the KFO are receiving increasing season-long use by both permitted users and the general public. Although progress is being made on grazing allotments, other uses are more difficult to manage. User-created roads and trails are not only increasing but are being used throughout the year. During the rangeland health assessments, accelerated erosion has been observed due to unmaintained roads and an abundance of trails.

Forecasts

To help protect long-term soil health, travel management is needed, and more importantly, a focus on good erosion control practices on existing roads, trails, and surface disturbances.

Reviewing the soils within the KFO, surface use limitations on slopes greater than 40 percent may not be protective enough. Due to the geology, energy companies often insist that moving a well location to a gentler slope is not possible. These steeper drill sites (less than 40 percent) have required much more staff time in the past and to date have not been fully reclaimed.

Surface reclamation has often been limited to respreading the topsoil, seeding, and water bars where needed. Increasing the review of actual project construction and reclamation practices and requiring additional timely soil protection appears to be warranted.

Continued work with universities or other agencies to collect data on long-term soil health is recommended to further monitor and adapt resource management.

3.1.4 Water Resources

A. Current Conditions

Water Quality: The KFO's streams are in the upper portions of the Colorado and North Platte River Basins. Water quality is generally good, with low dissolved solids. Streams in the west half of Grand County increase in sediments and dissolved salts as the geology tends to be more sedimentary. In the Muddy Creek watershed, Red Dirt, Pinto, and Deer Creek occasionally exceed the state's water quality standards for sulfates and selenium and tend to have KFO's highest total dissolved solids and electrical conductivities. The BLM's segments are below irrigation diversions and irrigated meadows that appear to aggravate the problem. Although the water quality appears to be largely geologic and outside of the BLM's control, overall improvement of BLM-administered public lands in the area is desired. An example of this is the Deer Creek area in Middle Park. The BLM's riparian area is improving and is under grazing management plans, although much of the stream is on private land

Water quality improvements or changes may not always be measurable in the short BLM stream segments. By focusing on all the land health standards (i.e., upland soils, vegetation, riparian conditions, and water quality), the BLM can ensure that its lands are not degrading water quality on public lands or downstream due to poor management. There are short segments of streams where private diversions completely dry up streams on public lands. Ditch seepage, groundwater sources, and irrigation return flows generally help put some water back into the channel. The ditch's construction and route can greatly reduce the amount of water returning to the public segment. In the larger streams and rivers, the cumulative diversions have resulted in wide shallow streams with warmer summer temperatures. As an example, the following section looks at the Colorado River's temperature during the 2006 summer season.

In 2006, Grand County Water Information Network placed temperature recording devices in seven locations on the Colorado River below Windy Gap Reservoir to BLM's Pumphouse Recreation Area below Gore Canyon. The devices collected water temperatures primarily from July through September. The collected data indicated that with the hot summer air temperatures, water temperatures at some locations did not have sufficient night time recovery for fish. In 2007, the Colorado State Water Quality Control Commission adopted temperature standards. The BLM has placed 3 temperature sensors, 2 in the Colorado River and 1 in Antelope Creek in 2007 to help monitor stream temperatures in coordination with Grand County Water Information Network's continued monitoring efforts.

Groundwater: The KFO has inventoried 48 wells on public lands, 120 undeveloped seeps or springs, and 101 developed springs. Most of the sources provide livestock and wildlife water, with only one well providing public drinking water at a recreation site.

"The geology and groundwater hydrology of North and Middle Parks is (sic) very complex. (BLM 1984)" Unlike the eastern portion of Colorado, there are no large well-defined aquifers that yield large volumes of groundwater. Most of the groundwater is found either in alluvial aquifers, such as those along the North Platte or Colorado Rivers, or in isolated pockets of porous sedimentary rocks. These latter sources are not considered aquifers because of their limited extent, great depth, or probability of being drained (Voegeli 1965).

Aquifers and groundwater sources are recharged primarily by infiltration from streams and percolation of precipitation (Voegeli 1965). North Park's groundwater in the Coalmont formation is primarily recharged at the edges of the park and the major interior ridges (example: Peterson Ridge), and the center of the park has very low transmissivity (Robson and Graham 1996). Both North and Middle Parks have essentially closed groundwater basins, from which very little groundwater moves out. Groundwater quality and quantity is adequate for both domestic (human) and livestock uses. It is infrequently used for irrigation.

Most of Middle Park is underlain with rock that is capable of yielding only small amounts of water. The alluvium is the principal source of groundwater, yielding supplies adequate for domestic and livestock use. Most of the formations are nearly impermeable to water, which reduces the amount of groundwater. However, in some areas these formations are faulted and fractured so that some groundwater is stored. Sedimentary rocks of the Tertiary system yield good water when the primary constituents of the formation are sandstone, sand, gravel, or boulders (Voegeli 1965).

As with Middle Park, the alluvium is the principal groundwater source in North Park. In addition, glacial deposits and sandstone areas in the North Park and Coalmont formations yield adequate water for domestic and livestock uses. The Coalmont formation and alluvial deposits are the most dependable sources of groundwater.

Riparian: At the time of the 1984 RMP, the KFO did not have Global Positioning System/Geographic Information System (GIS) capabilities, so actual stream mileages and wetland/riparian acreages are still being refined. The BLM uses an interdisciplinary team to review vegetation, soils, and hydrology of a riparian-wetland area and determine its PFC. Within the KFO, there are many public stream segments that are affected by upstream diversions and private water uses. The capability of the stream has been altered and is outside of the BLM's control. If the stream is still supporting a stable riparian community, the BLM has given them a PFC rating, despite some hydrology concerns. Functioning at Risk (FAR) ratings are for streams that are functional but at risk. In the KFO, most of the FAR streams are ones where the utilization levels place the area at risk for degradation, especially if continued. Desired plant communities that can help stabilize the stream are starting to be replaced by ones that tolerate moderate to heavy use. Nonfunctional (NF) areas no longer provide the basic riparian-wetland values, due to the conditions. Unknown areas need to be inventoried to determine the current condition; some are streams that have not been inventoried for many years. For wetland areas, there is

still a need for better inventory, especially in timbered areas where aerial photographs do not necessarily reveal small seeps. Wetland acreage also needs to be mapped to improve acreage estimates. In the North Park area, there are several small swales that support wetlands that have not been mapped. Included in the wetland acreage are nonjurisdictional wetlands and water impoundments that support wetland vegetation. See **Table 3-5** below for a summary of wetlands in the KFO. This table is updated yearly.

Due to the time and the specialists required to assess all the riparian/wetland areas, the BLM attempts to survey a portion each year and to monitor those with identified concerns. Some ratings may be more than five years old, especially if the area referred to was PFC and no management changes have occurred. **Table 3-6** provides a summary of the BLM's surface water resources by Fifth Order Watershed and recognized water quality concerns in 2006. This table is updated yearly. Map 7– Watersheds (**Appendix G**) shows the BLM's surface water resources by Fourth Order Watershed and recognized water quality concerns in 2006. Map 8– Hydrologic Features (**Appendix G**) shows other surface water resources in the GSFO.

Water Rights: The BLM has an absolute water right on most developed water sources and inventoried undeveloped springs on the public lands it administers. There are some private filings that are also on public lands, many associated with US Geological Survey (USGS) wells drilled in the 1970s and filed on by nearby land owners. There are also several allotments where the permittees' irrigation ditches provide livestock water on public lands. These are private water rights that are not controlled by the BLM. In the late 1980s, the KFO completed a water needs assessment for each allotment. During permit renewal, the physical and legal availability for the permitted livestock is reviewed. Where there is an obvious shortage of water and if additional water cannot be developed, then an AUM adjustment is recommended.

Table 3-5
Wetlands within the KFO

County	PFC (acres)	FAR Upward Trend (acres)	FAR No Trend (acres)	FAR Downward Trend (acres)	Nonfunctioning (acres)	Unknown (acres)
Eagle	8	0	2	0	0	0
Grand	196	48	150	20	0	3
Jackson	2163	315	9	0	0	3
Larimer	2	0	0	1	0	0
Summit	5	0	0	0	0	0
TOTAL:	2374	363	161	21	0	6

Table 3-6
Summary of Public Land Streams within the Kremmling Field Office Planning Area for 2006 (includes perennial, intermittent, ephemeral with riparian vegetation)

Watershed	Percent of Watershed KRFO Lands	303(d) Listed Streams in 2006	Streams on the 2006 Monitoring and Evaluation List	PFC Miles	FAR Miles	NF Miles	Unknown Miles	Total Miles
Big Creek/Beaver Creek	3.7 percent*	None	S. Fork Big Creek (within USFS Wilderness Area) for copper	10.7	0.	0	0	10.7
Lower Blue River	13 percent*	None	None	7.6	0	0	0	7.6
Canadian	27 percent*	Spring Creek for dissolved oxygen, medium priority	None	4.0	2.5	0.4	0	6.9
Colorado River Headwaters to Fraser River	4.5 percent*	None	None	0	0	0	0	0
Colorado River Fraser confluence to Williams Fork	29 percent*	None	None	21.5	0.8	0	0	22.3
Colorado River above Kremmling	28 percent*	None	None	38.2	6.2	0	0.4	44.8
Colorado River above State Bridge	31 percent*	None	None	22.7	0	0	0.8	23.5
Fraser River	6 percent*	None	None	14.9	0	0	0	14.9

Table 3-6
Summary of Public Land Streams within the Kremmling Field Office Planning Area for 2006 (includes perennial, intermittent, ephemeral with riparian vegetation) *(continued)*

Watershed	Percent of Watershed KRFO Lands	303(d) Listed Streams in 2006	Streams on the 2006 Monitoring and Evaluation List	PFC Miles	FAR Miles	NF Miles	Unknown Miles	Total Miles
Grizzly Creek	36 percent*	None	Grizzly Creek, Little Grizzly Creek for aquatic life use	7.9	0.4	2.6	0	10.9
Illinois River	21 percent*	Illinois River- for Fe(trec), Medium Priority	Snyder Creek, Parkview Creek (no BLM) sediment	4.5 (0.3 miles Illinois River)	1.2	0	0	5.7
Lake Creek/N. Fork of the N. Platte River	12 percent*	None	None	4.6	0	0	0	4.6
Laramie River	8 percent*	None	None	15.4	2.6	0	0	18
Michigan River	11 percent*	None	None	3.6	0	0	0	3.6
Muddy Creek	25 percent*	Alkali Slough- for Fe (trec), Se. Low Priority	Wolford Mountain Reservoir on Muddy Creek Dissolved Oxygen, Muddy Creek and tributaries temperature	15.7 (0.3 Alkali Slough)	3.9	0	0.3	19.9
North Platte River Upper	10 percent*	None	None	0	0	0	0	0
North Platte River Above 3-Way	49 percent*	None	None	7.9	0.4	0	0	8.3

Table 3-6
Summary of Public Land Streams within the Kremmling Field Office Planning Area for 2006 (includes perennial, intermittent, ephemeral with riparian vegetation) *(continued)*

Watershed	Percent of Watershed KRFO Lands	303(d) Listed Streams in 2006	Streams on the 2006 Monitoring and Evaluation List	PFC Miles	FAR Miles	NF Miles	Unknown Miles	Total Miles
North Platte River Below 3-Way	3.1 percent*	None	None	2.6	0	0	0	2.6
Piney River	3 percent*	None	None	2.3	0	0	0	2.3
Sheephorn Creek	3 percent*	None	None	2.4	0.5	0	0	2.9
Shell Creek/Sand Creek	2.2 percent*	None	None	8.3	0.2	0	0	8.5
Williams Fork River	7 percent*	None	None	6.3	1.9	0	1.1	9.3
Willow Creek	3 percent*	None	None	1.0	0	0	0.4	1.4

The North Park basin is considered to be fully adjudicated, and any new filings must be able to be administered (for example, diversion shut off, reservoir releasing) when a senior call is on the river. A senior water right may place a "call" on a stream if they are unable to divert their adjudicated amount. Junior water right holders may not divert their right during the call until the senior right is met. To provide livestock or wildlife with water during these times, the BLM must secure an augmentation source of water to release in order to offset their diversions. In the Middle Park area, there is currently augmentation water available for leasing to offset the BLM's junior water uses.

The BLM has been collecting field data on North Park and Grand County streams to recommend instream flows on public stream segments. In January 2007, three streams in the North Park area will be recommended for instream flows. There is only one instream flow on public lands in North Park on a segment of Grizzly Creek. Most of the eligible streams in Middle Park have instream flows, although some of the filings are older and do not include seasonal variations but have one flow for the entire year. Data collected in 2006 is being used to review if the existing decreed flows are adequate and to recommend three new instream flows.

B. Characterization

Indicators

As stated in Chapter 2 under Water Resources, the following indicators are used in evaluating land health standards related to the following standards:

Standard 2—Riparian Systems Indicators

- Vegetation is dominated by an appropriate mix of native or desirable introduced species;
- Vigorous, desirable plants are present;
- There is vegetation with diverse age class structure, appropriate vertical structure, and adequate composition, cover, and density;
- Streambank vegetation is present and is composed of species and communities that have root systems capable of withstanding high streamflows;
- Plant species indicate maintenance of riparian moisture characteristics;
- Stream is in balance with the water and sediment being supplied by the watershed (e.g., no headcutting, no excessive erosion or deposition);
- Vegetation and free water indicate high water tables;
- Vegetation colonizes point bars with a range of age classes and successional stages;
- An active floodplain is present;
- Residual floodplain vegetation is available to capture and retain sediment and dissipate flood energies;
- Stream channels with size and meander pattern appropriate for the stream's position in the landscape, and parent materials; and
- Woody debris contributes to the character of the stream channel morphology.

Standard 5—Water Quality Indicators

- Appropriate populations of macroinvertebrates, vertebrates, and algae are present; and
- Surface water and groundwater contain substances (e.g. sediment, scum, floating debris, odor, heavy metal precipitates on channel substrate) attributable only to humans, within the amounts, concentrations, or combinations as directed by the Water Quality Standards established by the State of Colorado (5 CCR 1002-8).

Trends

The overall riparian/wetland conditions are improving within the KFO primarily due to more intensive range management. In the past, heavy use of small riparian

segments or wetlands was accepted, as these "sacrifice areas" were difficult to manage. To help meet the riparian/wetland portions of land health standards, grazing plans, upland improvements, and allowable use are being developed based on these unique areas. In the more recent drought years, many wetland areas actually continued to improve as permittees opted not to use their allotments or shortened their grazing season. Some riparian areas, however, were grazed heavier as upland water developments dried up and livestock stayed along the streams. A review of areas during drier summers helps identify permits that may need additional management. In addition to drought concerns, a monitoring workload exists in tracking if management changes are yielding the desired results and if implementation is being done consistently.

There is a continued push to protect or improve water quality and to reduce non point-source pollution. Phase II of the Stormwater Regulations requires more permitted actions on public lands to develop erosion control plans and to reduce non point-source pollution from ground disturbances. Although BLM-administered lands are often a small percentage of a watershed, in developing Total Maximum Daily Loads (TMDLs) for impaired streams on the 303(d) list, federal lands are among the most manageable, especially as landowner participation is voluntary. Currently, none of the listed streams within the KFO have TMDLs that involve the BLM. Streams with possible temperature impairment (included in Colorado's Monitoring and Evaluation List) may be difficult to improve, especially where private diversions create low summer flows.

Increased energy production may occur within the KFO, especially in the North Park area. If coal bed methane production is to be developed, then an adequate review of the geohydrology of North Park is needed to help reduce concerns of groundwater quality and quantity impacts. Opportunities or problems resulting from produced water disposal on both private and federal leases also need review. Most of KFO's groundwater resources, including wetlands and livestock wells, are in the North Park area.

Forecasts

Irrigation rights are expected to continue being bought and sold, with some new property owners informally changing how the right was historically used. An example is switching from irrigated hay meadow to irrigated pasture, which may result in a longer irrigation season. Due to the continued population growth and land sales, more agricultural water rights may be converted to municipal and industrial uses. There are many rights that are leased to agricultural users until needed by municipal and industrial users. These changes may greatly affect the hydrology of streams and wetlands on public lands. There are several acres of public wetlands that are supported or created by the current private irrigation practices.

The BLM's limited water rights on streams and the state's instream flow rights may not provide adequate flows, or range/duration of flows, to continue to support the current stream channel dimensions, water quality, and riparian community. In

general, the BLM's smaller, more headwater streams would not be affected as there are no diversions or diversions occur downstream of public land. Larger streams have numerous upstream users that could affect the BLM segment's water quality, volume, fisheries, and recreational uses.

There are two pending water firming projects in the Upper Colorado River basin that could result in a fairly constant hydrograph, regardless of drought or surplus years. To meet the identified "gap" to provide water to the Front Range, additional diversions and reservoir operational changes will most likely occur in the Upper Colorado or the Blue River watersheds, affecting KFO's streams. Although the BLM is involved in the Basin Roundtables and the local water forums, additional action is needed to ensure that sufficient water exists to support the fisheries, water quality, riparian habitat, and recreational uses on public lands.

To continue to meet resource goals, existing groundwater quality and quantity must be protected. There will be continued demand for upland water sources on both private and public lands. In order to develop new sources without affecting existing users and wetlands, additional groundwater information of recharge areas and groundwater quality will be needed.

As more varied users access BLM lands, there will be more pressures on the riparian/wetland systems. Increasing public awareness of the riparian/wetlands areas and managing the levels of use to reduce impacts are important, especially in areas where uses have not yet caused significant impacts.

3.1.5 Vegetative Communities

The KFO consists of high mountain valleys and parks with the surrounding slopes and mountains. The valleys and parks are mostly vegetated with sagebrush steppe vegetation communities that usually transition to aspen and then either to lodgepole pine or spruce/fir/Douglas-fir forests. Vegetation can be characterized by ecological provinces and more specifically by plant communities/vegetation types. The plant communities discussed below are those that provide the most important land cover across the KFO. Special status plant species are discussed in Section 3.1.6.

Ecological Provinces

Bailey (1995) places the KFO in two different ecological provinces of the North American ecoregions (Map 9–Ecological Provinces, **Appendix G**). A majority of the KFO is within the Southern Rockies ecoregion. The Southern Rockies Ecoregion is composed of high elevation, steep, rugged mountains. Although coniferous forests cover much of the region, as in most the mountainous regions in the western US, vegetation, as well as soil and land use, follow a pattern of elevational banding. The lowest elevations are generally grass or shrub covered and heavily grazed. Low to middle elevations are also grazed and covered by a variety of vegetation types including Douglas-fir, ponderosa pine, aspen, and juniper-oak woodlands. Middle to high elevations are largely covered by coniferous forests and have little grazing activity. The highest elevations have alpine characteristics. The region includes the

Colorado Mineral Belt, a broad area stretching northeast from the San Juan Mountains in southwestern Colorado to the Colorado Front Range near Boulder. Most of the historic mining camps of Colorado lie in this area.

Southern Rocky Mountain

The Rocky Mountains are rugged, glaciated mountains with a north-south orientation and altitudes of up to 14,000 ft plus. Average annual temperatures range from 35° to 45° over most of the Rocky Mountains. In the higher elevations, most of the precipitation is in the form of snow, but very few permanent snow fields and glaciers exist. Annual precipitation amounts generally range from 10" to 20" in the lower elevations and increase as elevation increases. At higher elevations, precipitation averages around 40" per year. Vegetation is a mixture of forests, grasslands and shrublands with treeless tundra above the treeline. Forests are mostly coniferous with Englemann spruce and subalpine fur in the subalpine zone with some Douglas-fir, mostly in the moister areas. Aspen and lodgepole pine usually become dominant in the subalpine zone following fire. The montane zone falls just below the subalpine zone and is dominated by ponderosa pine with Douglas-fir found on the wetter, cooler north facing slopes. Grasslands and shrublands are found in the numerous parks and other open areas interspersed throughout the Southern Rocky Mountains. These grass and shrub lands are usually dominated by big sagebrush and native perennial grasses.

Major Vegetation/Plant Communities

A plant community is a group of plant populations that coexist in space and time and affect each other's population dynamics directly or indirectly. Distinct plant communities within the KFO are influenced by characteristics such as soil depth, texture, and salinity; climate variables (particularly temperature), total seasonal distribution of precipitation, and wind; and topographic features, most importantly elevation, aspect, and slope. The following discussions of plant communities that occur within the KFO show the diverse and complex nature of vegetation resources in the area.

Thirteen distinct vegetation communities are found in the KFO. Four major vegetation communities make up over 90 percent of the vegetation. **Table 3-7** lists the major vegetation communities in the KFO (Map 10–General Vegetation Zones, **Appendix G**).

Table 3-7
KFO Vegetative Communities

Vegetation Community	KFO Total Acreage (including private, other federal)	KFO Total Acreage (BLM-administered public lands)	Acres of Total North Park	Percent of Total North Park	Acres of Total Middle Park	Percent of Total Middle Park	Percent of KFO (total)	Percent of KFO (BLM only)
Forests/Woodlands								
Lodgepole pine	1,059,213	69,665	526,122	35.4	533,077.0	32.7	34.0	18.4
Aspen	230,916	20,996	78,699	5.3	152,215.0	9.3	7.4	5.5
Spruce fir	386,983	838	130,687	8.8	256,296.0	15.7	12.4	0.2
Douglas-fir	8,882	4,097	0	0.0	8,882.0	0.5	0.3	1.1
Pinyon juniper	29,127	17,256	0	0.0	29,127.0	1.8	0.9	4.6
Ponderosa pine	21,008	2,981	21,008	1.4	0.0	0.0	0.7	0.8
Limber pine	121						<1	
Rangelands								
Sagebrush steppe	710,243	247,064	440,083	29.6	300,461.0	18.4	22.8	65.3
Irrigated meadow	173,460	4,981	145,023	9.8	56,619.0	3.5	5.6	1.3
Mountain shrub	15,680	451	3,247	0.2	12,200.0	0.7	0.5	0.1
Salt shrub	10,159	150	6,587	0.4	3,572.0	0.2	0.3	0.0
Native grasslands	31,440	6,881	23,341	1.6	3,228.0	0.2	1.0	1.8
Riparian/wetlands								
Riparian	11,000	108	6,529		4,471.0	0.3	0.4	<1

Forests/woodlands

A. Current Conditions

The current estimate of forest land area in the KFO is approximately 93,900 acres. The current allowable cut of 2.3 million board-feet was calculated in 1992 from about 35,800 acres of suitable commercial forest lands. Additional volume and biomass are available for harvest from noncommercial species and other commercial forest lands that were considered unsuitable due to such factors as isolated location, access, and slope in the calculation. See **Table 3-8** for a breakdown of types and acreage.

Table 3-8
KFO Forest Acres and Types

Common Name	Scientific Name	Acreage*
Lodgepole pine	*Pinus contorta*	62,530
Aspen	*Populus tremuloides*	17,905
Spruce-fir:		1,855
Engelmann spruce	*Picea engelmannii*	
Subalpine fir	*Abies lasiocarpa*	
Douglas-fir	*Psuedotsuga menziesii*	4,530
Pinyon-juniper:		6,955
Pinyon pine	*Pinus edulis*	
Rocky Mountain juniper	*Juniperus scopulorum*	
Utah juniper	*J. osteosperma*	
Ponderosa pine	*Pinus ponderosa*	5
Limber pine	*P. flexilis*	120

*Timber Harvest Calculations, August 1993 by Steve McCallie and Bill Williams

Lodgepole Pine

Lodgepole pine is the dominant tree species in the planning area and also has the highest commercial value. The current lodgepole pine stands are the result of large-scale stand-replacing fires of 100 to 150 years ago. The stands tend to be pure or nearly pure lodgepole pine due to their ability to regenerate quickly following fires. Lodgepole pine is a pioneer or invader species that regenerates best in open sites with exposed mineral soil, which is the common condition following a large-scale fire. Other tree species cannot survive these stand-replacing fires and are generally excluded from the lodgepole pine stands. Small pockets of other species may occur scattered throughout the area, primarily in draws or wetter areas where the fire intensity was not as severe. Lodgepole pine is the climax species in most of the pine stands in the planning area as it cannot be replaced by other tree species due to a lack of seed source. The lodgepole pine is found in elevations of 8,000 to 10,000 feet. Understory vegetation is sparse in mature stands due to the full crown closure and limited light penetration to the ground. Common understory species include grouse whortleberry, kinnikinnick, russet buffaloberry, Oregon grape, sedges, and common juniper.

The lodgepole pine forests are mature or overmature and in declining condition throughout the Rocky Mountain west in the US and Canada. Mountain pine beetle (*Dendroctonus ponderosae*) is at epidemic levels over much of the interior west and most of the KFO. The beetles are infesting trees in nearly all size classes. A multiyear drought and warmer than normal winter temperatures have combined to increase the amount of beetle activity to unprecedented levels (Map 11–Beetle Kill, **Appendix G**).

Quaking Aspen

Quaking aspen is the most common deciduous species in the planning area. The stands tend to be varied in composition and distribution. There are numerous large

pure aspen stands in the transition area between the sagebrush and the lodgepole pine and other conifers. It is also found as a component in some conifer stands as small islands, particularly in draws and wetter areas. Most quaking aspen stands are at or beyond maturity in the KFO and many of these stands are beginning to deteriorate and are susceptible to numerous diseases and fungi. The extended drought of the 1990s is also thought to be a factor in the decline of aspen health. Aspen does not regenerate well without some type of disturbance such as fire or harvesting, so these stands are collapsing and may convert to either sagebrush or grasses. The aspen stands provide a varied and desired understory for cattle and wildlife, including brome, rye, wheatgrass, and several palatable forbs. Commercial use of aspen is limited due to a lack of markets, though a potential does exist for biomass use. If biomass or fuel pellet markets become established, the commercial demand would make regeneration of aspen stands economical and could produce younger more vigorous stands with much higher wildlife forage value.

Pinyon-Juniper

Pinyon pine and two species of juniper, Rocky Mountain and Utah, are common in the warmer and drier elevations, ranging from 6,500 to 8,000 feet. These stands are primarily along the Colorado River corridor from Gore Canyon downstream to State Bridge. Pinyon pine and juniper are at higher than historical densities and are encroaching on sagebrush areas due to the fire control measures in place the past decades. The loss of the natural fire occurrences has allowed the trees to become so dense as to crowd out much of the grasses and forbs commonly found within the stands. The trees are also encroaching into areas that were predominantly sagebrush. The changes in density and distribution have reduced the amount of shrubs and bunchgrasses available in some critical winter range areas for deer and elk. Commercial uses of pinyon-juniper are limited to firewood and fence posts, neither of which is in high demand.

Other Conifers

Several other conifer species are scattered throughout the planning area. Douglas-fir is most commonly found on north aspects in the 6,000 to 8,000 elevation range. It tends to grow in uneven aged stands and has limited commercial value. Limber pine grows in some of the harsher sites on the fringe of lodgepole pine stands. Commonly found on exposed rocky and windswept ridges, its range is limited in the planning area. It is also susceptible to the mountain pine beetle, and many of the mature trees are dead or dying. It has no commercial value but does provide protection as a windbreak for the adjoining lodgepole pine stands. The most prevalent understory vegetation is common juniper, and there is very little forage value in the stands. Stands of Engelmann spruce and subalpine fir exist in the higher wetter areas, generally above 9,000 feet. Lodgepole pine is often a minor component of these stands. Subalpine fir is considered to be potential habitat for the Canada lynx due to the presence of snowshoe hares, the preferred food of lynx. The spruce has commercial value but is relatively scattered and often found in drainage bottoms. Subalpine fir has low commercial value with its primary product as Christmas trees. Ponderosa pine is present in one stand in North Park, and some remnant trees exist

along the Colorado River. It has limited commercial value and is somewhat of an anomaly in North Park.

B. Characterization

Indicators

The primary indicator of poor or declining forest health conditions is numerous dead or dying trees within a stand. Trees with red needles are the most common indicator of recent deaths. The "grey ghosts," trees without any needles remaining, have been dead for five or more years. After trees have been dead for ten to fifteen years, they begin to lose their root strength, due to rot or decomposition, and topple. Large areas of downfall indicate a stand in transition from overmature to regenerating. In types that are normally uneven aged (spruce/fir, pinyon/juniper, and Douglas-fir), this is the natural process to maintain the age diversity. In types that are normally even aged (lodgepole pine and aspen) regeneration often needs some type of disturbance, historically fire, to regenerate the entire stand in a short period. Another indicator of poor health in lodgepole pine is "witches brooms," branches that are clustered and misshapen. These are a prime indicator of dwarf mistletoe (*Arceuthobium americanum*), an obligate parasite that affects tree growth and vigor.

Trends

Lodgepole pine type: The current trend is a significant decline in health. The vast majority of trees are mature or overmature and very susceptible to insects and diseases. The mountain pine beetle infestation has taken a heavy toll on trees in both Middle Park and North Park. Significant areas are showing many dead and dying trees, as evidenced by red needled trees and trees that have lost most or all their needles. The infestation is affecting trees that were commonly considered too small in diameter in the past.

Aspen type: Most aspen trees in the planning area are mature or overmature. The trend is increasing stand mortality due to a combination of factors. The average age of the stands is at or over the average life expectancy, and there is a corresponding lack of vigor. Another factor being considered is the extended drought and its effect on available groundwater. This may be affecting the ability of the trees to sprout and regenerate even after a disturbance, such as a fire or harvesting operation. Numerous fungi and other diseases are also common in aspen.

Pinyon/juniper type: This timber type seems to be relatively stable at present. Trees are encroaching into adjacent sagebrush areas, primarily due to fire control measures that have prevented natural fires in the sagebrush and allowing the pinyon-juniper trees to become established. Areas in the southwest part of Colorado have recently experienced an outbreak of pinyon ips beetle (*Ips confusus*) and heavy mortality in pinyon and juniper, believed to be due to the extended drought. An outbreak could occur in the planning area in the near future.

Spruce/fir type: These stands are composed of a mix of Engelmann spruce and subalpine fir, which is a small component of the KFO's timber base. There are nearby outbreaks on national forest lands of spruce beetle (*Dendroctonus rufipennis*) that could affect BLM-managed stands. Most Engelmann spruce are at or over maturity and are very susceptible to a beetle attack. The subalpine fir is susceptible to various diseases, especially root rots. Pockets of the disease exist throughout the timber type and appear to be increasing.

Douglas-fir type: This type is most often found on north slopes and appears to be relatively stable at the present. Most of the trees are mature or overmature and appear to be naturally regenerating in openings created by dead trees.

Limber pine type: Limber pine is also attacked by the mountain pine beetle commonly found in lodgepole stands. Limber pine is most often found on the fringes of the lodgepole type in the harsher, more windswept sites. The combination of poor sites, drought and beetles is causing a decline in the limber pine type.

Forecasts

The continued aging of unmanaged forests will create additional fuels on the ground. If fires occur before the fuel loadings are heavy, this may create openings in dense stands for regeneration and improved wildlife habitat. This is the natural cycle in uneven aged timber types, such as spruce/fir, pinyon/juniper, and Douglas-fir.

If the fuel loadings become heavy or extreme, the fire would likely be stand replacing. This is historically what appears to happen in lodgepole pine and aspen stands. The scale of these fires can be extreme (thousands of acres), as evidenced by the current natural lodgepole pine forests, with a very small age range between the oldest and youngest trees in a stand.

The risk of large-scale fires in lodgepole pine is increasing each year as mountain pine beetle mortality increases. The red needled trees are susceptible to crown fires and as more trees fall to the ground, surface fires will increase. The impacts of large-scale forest fires are very severe to water quality and quantity, soil stability, wildlife habitats, visual resources, recreation opportunities and property values.

Rangelands

A. Current Condition

Sagebrush Steppe

The most common vegetation community within the KFO is the sagebrush steppe vegetation community. The sagebrush steppe vegetation community is generally in good condition across the KFO. It is where most livestock grazing occurs and provides valuable winter habitat for big game. Most of the livestock grazing systems on lands administered by the KFO are designed to apply BMPs to the sagebrush steppe vegetation community. It is dominated by big sagebrush, with scattered other

shrubs and an understory of grasses and forbs. The grasses are mostly native, cool season, and perennial. Annual and perennial forbs provide a substantial amount of feed, especially for wildlife, including the greater sage-grouse. However, the forb component is highly variable from year to year, depending heavily on precipitation timing and amounts. Several subspecies of big sagebrush are found within the KFO. Although they are of the same species they have different growth forms and require different methods of management.

Three of the four subspecies of big sagebrush inhabit the rangelands of KFO. Mountain big sagebrush (*Artemisia tridentata* ssp. *pauciflora*) grows in a variety of soils on the side slopes and ridges from 6,500 to 8,500 feet elevation. Most sites occupied by mountain big sagebrush are very productive and have a diverse understory of grasses and forbs. Because mountain big sagebrush grows on relatively good sites, many acres have been treated for sagebrush control within the past 50 years. Treatments continue today to make a mosaic of sites with different age classes and amounts of fringe between existing sagebrush and newly created open areas.

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) is the shortest of the subspecies (24 to 36 inches) and grows on the driest sites of the sagebrush subspecies. It can grow in areas with a seven- to eleven-inch average annual precipitation. It usually is found on shallow fine soils. The understory is generally composed of a variety of native grasses and forbs. The forb component may vary significantly with recent precipitation amounts and timing. Wyoming big sagebrush provides a considerable amount of forage for wild ungulates and greater sage-grouse. However, the recent drought and continued grazing has put this vegetation type in poor condition. A goal of the KFO is to improve the overall condition of the Wyoming big sagebrush vegetation community.

Subalpine big sagebrush (*A. t.* ssp. *vaseyana*) is similar to mountain big sagebrush but is usually found on moister sites at higher elevations (8,500 to 10,000 feet). This vegetation community usually produces a dense understory of grasses and forbs, but it does not receive an abundance of grazing due to the high elevation and short grazing season.

Basin big sagebrush (*A. t.* ssp. *tridentata*) is the tallest of the subspecies, growing to five to six feet high. Basin big sagebrush grows in deep well-drained soils and alluvial plains. However, these ecological conditions exist only in very small areas within KFO. Basin big sagebrush does not grow in North Park, and none or very little grows in Middle Park.

Other shrubs that are found within the sagebrush steppe communities include antelope bitterbrush, mountain mahogany, serviceberry, snowberry, rabbitbrush, currant, Wood's rose, and winterfat. These species make a small percentage of the shrubs within the sagebrush steppe vegetation communities but provide an important source of browse for big game and other wildlife species.

Irrigated Meadow

These meadows are mostly private lands, not administered by the BLM. Irrigated meadows are mostly lower elevation, flat areas, including river bottoms, terraces, and benches that are mainly used for hay production in the summer and winter feeding areas. The major grasses used for hay production on the irrigated meadows include timothy, smooth brome, orchardgrass, American sloughgrass, meadow foxtail, and redtop. Grass-like plants, such as sedges and rushes, are also found in these meadows, often on the wetter boggy sites.

Mountain Shrub

Mountain shrub communities constitute only a small amount of vegetation cover within the KFO. They are mostly composed of serviceberry (*Amelanchier alnifolia*) and true mountain mahogany (*Cercocarpus montanus*), with some snowberry (*Symphoricarpus oreophilus*), gooseberry (*Ribes* spp.), antelope bitterbrush (*Purshia tridentata*), big sagebrush, and rabbitbrush (*Chrysothamnus* spp.). The most common areas where mountain shrub vegetation communities are found are on northern exposures in snow pockets and along drainages where moisture is not a limiting factor. These areas are frequently located about midslope and may be associated with steep topography. Although thinly scattered, mountain shrub vegetation communities provide vital feed and cover for wildlife and livestock.

Salt Shrub

Salt Shrub is found in lower elevation drainages in both Middle and North Parks. These areas are characterized by heavy poorly drained soils. The water table is usually close to the surface, and as the water evaporates it leaves an accumulation of salt on the soil surface. Salt shrub is mostly dominated by greasewood (*Sarcobatus vermiculatus*), with a poor quality understory. Poor quality, salty soils and lack of water restrict vegetative growth to a few salt-tolerant grass species, including inland salt grass (*Distichlis spicata*), western wheatgrass (*Pascopyrum smithii*), and bottlebrush squirreltail (*Sitanion hystrix*), and scattered, hardy forbs that generally do not provide much forage value.

Native Grasslands

Native grasslands within KFO generally consist of two distinct types. The dry grasslands are usually small isolated areas that are often found on exposed ridges or hilltops where winds reduce available moisture and prevent growth of shrubs. These sites generally have very shallow soils and often include a high percentage of rocks or cobbles. The vegetation is mainly low growing grasses and forbs, which can survive in these harsh conditions.

Moist/wet grasslands consist mainly of high mountain meadows that support a productive, diverse plant community. These grasslands can be found in mountain valleys, swales, and parks and around pot holes that provide ample moisture. The topography is generally fairly level to gently sloping. Numerous grass, grass-like, and forb species produce a lush variety of vegetation that provides significant amounts of summer feed for wildlife and livestock.

B. Characterization

Indicators

In 1996, the BLM adopted the Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado. These standards and guidelines were developed to provide guidance to the BLM and public land users to maintain or achieve rangeland health. During the permit renewal process, allotments are assessed for compliance with the standards and guidelines by an interdisciplinary team that visits the site and determines the health of the vegetation in the allotment. The health of the vegetation is determined by the following:

- Analysis of the amount and distribution of noxious weeds and other undesirable species;
- Spatial distribution of the native plant species across the landscape, with a density, composition, and frequency of species suitable to reproductive capability and sustainability;
- Representation of proper age classes; and
- Correct density and diversity of plant species to match the landscape.

Trends

Sagebrush Steppe: Sagebrush steppe is the main vegetation type within the KFO and provides most of the food for wildlife and livestock. Historically, poor livestock management policies, such as season-long grazing and too many livestock, have caused some areas to not be in compliance with the standards and guidelines. These areas are being converted to lower grazing pressure and rest or deferred rotation grazing systems. Rotation grazing systems have proven to be valuable for the vegetation and allow the range to recover and to make progress toward being in compliance with the standards and guidelines. However, sagebrush steppe vegetation requires a relatively long time frame to recover through changes in livestock grazing practices. More rapid recovery can be accomplished through application of vegetation management techniques, such as brush beating, Dixie harrow, or Lawson aerator. Seeding following treatment may or may not be required depending on the current soil seed bank.

By implementing rest or deferred rotation grazing systems, reducing the amount of authorized grazing preference, and removing livestock when use levels are met on key species, the long-term trend of the vegetation in the KFO is positive. The ultimate goal is for all vegetation to be in compliance with the standards and guidelines.

Irrigated Meadows: Irrigated meadows play an intricate role in ranch management. The meadows are irrigated and used for hay production during summer. During winter, the livestock is kept on the meadows and fed the hay the meadows have produced. The irrigated meadows should continue to be used for hay production and winter feeding into the foreseeable future.

Mountain Shrub: The mountain shrub vegetation community produces only a small percentage of the overall forage base in KFO. However, the forage is usually important for wildlife as it is generally found in areas where big game winter. It is important to protect this vegetation type so it can continue to supply valuable forage to big game during winter. The mountain shrub communities appear to be retaining their overall good condition. However, any perturbations such as drought or extensive recreational use, such as OHV riding, could place undo stress on this vegetation community, with a subsequent decline in the condition and loss of winter forage for big game.

Salt Shrub: Salt shrub is a minor vegetation type within KFO. It provides only minor amounts of forage. Currently, this vegetation type is remaining relatively constant. However, because it produces only a rudimentary understory, it can easily be damaged through overgrazing. This vegetation type can respond to vegetation treatments if a supply of seeds is available from the seed bank. Otherwise, seeding would be required following vegetation treatment.

Native Grasslands: Grasslands are mostly in good condition throughout KFO. Dry grasslands are generally found on exposed ridges and windy knolls where livestock spend little time. These areas produce only a limited supply of very short vegetation. This vegetation type is typically more suited to use by wildlife than livestock.

The wet meadow grassland vegetation is generally in good condition. However, wet meadows require more intense management to maintain or improve the condition of the vegetation because they receive heavier than average livestock grazing pressure. Livestock tend to spend an inordinate amount of time on these grasslands. Meadows provide feed, are usually near water, are relatively flat in a mountainous area, and provide preferred areas for loafing. These meadows are also popular locations for recreational use and provide important wildlife habitat.

Many projects have been designed to ease the livestock pressure on the meadows. Vegetation treatments and water developments are used to draw livestock away from the meadows. Fencing has also been used to protect important meadows. The fences are designed to exclude livestock but allow access to wildlife.

With continued monitoring, implementation of deferred and rest rotation grazing systems, and compliance checks, both the wet and dry grasslands should continue to be in good or better condition into the future. Any areas where the vegetation is in less than desirable condition would be prioritized and management practices would be implemented. The overall goal is to have all of the grasslands in compliance with or headed toward compliance with the standards and guidelines.

Forecasts

Since 1999, during the permit renewal process, livestock grazing allotments have been analyzed for compliance with the standards and guidelines. If the KFO interdisciplinary team determined that improvements in the range condition were

needed for the allotment to be into compliance with the standards and guidelines, appropriate actions were implemented after consultation, cooperation, and coordination with the permittee and interested publics. Frequently, the appropriate action would be a rest or deferred rotation grazing system, vegetation treatments, water developments or a combination of the three. Future permit renewals will continue to use the standards and guidelines as a permit renewal prerequisite. Appropriate actions would be taken, as necessary, to meet the requirement that all allotments be in compliance with or heading toward being in compliance with the standards and guidelines.

Riparian and Wetlands

A. Current Condition

Although the total number of acres of riparian areas within the KFO is about one percent of the total acreage, wetlands and riparian areas are one of the most important ecological components of the environment. These areas, found along waterways and other wet areas, have adequate moisture and generally support lush vegetation. Livestock and wildlife tend to concentrate in these areas because they provide all of their necessities (food, water, and shelter). Riparian areas are also popular with recreationists. Sedges and rushes are the preferred vegetation within the riparian/wetland complex. They are deep, fibrous rooted, grass-like plants that prevent bank erosion along streams. These areas also can support willows, trees, and other woody vegetation that is important wildlife habitat for birds and other arboreal species.

Some riparian areas and wetlands have weed problems due to historical livestock grazing practices. Weed control through herbicide application can be effective in riparian areas and wetlands. The positive water regime found in these areas allows them to recover relatively quickly following disturbance. However, if aggressive annual weeds dominate a site, it may take a significant amount of time for the area to recover, even with a weed control program in effect.

B. Characterization

Indicators

PFC and standards and guidelines.

Trends

Trends are as follows: improving through better livestock control, rest rotation grazing systems with rest of the riparian areas, and weed control along riparian corridors. In the past, livestock grazing was the major cause of poor quality riparian areas, wetlands, mires, and fens. With initiation of the standards and guidelines and implementing appropriate actions to correct flaws in grazing practices, the riparian areas and other wetlands are receiving the attention needed to improve the quality of the riparian areas and wetlands throughout the KFO.

Forecasts

The riparian areas and wetlands should improve as more intensive livestock grazing practices would better control the amount of time livestock spend in the riparian areas and wetlands. During the livestock grazing permit renewal process, rest or deferred rotation livestock grazing systems are implemented, wherever feasible, to better control livestock and the amount of time they spend on the riparian areas and wetlands. Use levels on grasses, willows, or shrubs, generally 50 percent of current year's growth, are included in the grazing systems to ensure sufficient stubble remains after grazing to promote a healthy vegetative community.

3.1.6 Fish and Wildlife Habitat

The aquatic and terrestrial animal resources within the KFO include fish and wildlife and their habitats. While the USFWS and the CDOW are directly responsible for managing fish and wildlife, the BLM is responsible for land management. Therefore, on the lands under its purview, the BLM is directly responsible for managing fish and wildlife habitat and is indirectly responsible for the health and well being of fish and wildlife that are supported by the habitats that public lands provide. In addition, the BLM is mandated to ensure that special status species are protected, by virtue of the ESA and the BLM's Land Use Planning Handbook (BLM 2004a). This goal is furthered through a memorandum of agreement with the USFWS and the USFS.

The fish and wildlife habitats provided by BLM-administered public lands have largely been characterized in other chapters of this document through discussions of the air quality, water, soil, and vegetation within the KFO. The discussions of aquatic and terrestrial habitat below identify attributes of these resources that are particularly important to their role in providing fish and wildlife habitat.

A. Current Conditions

Fish and wildlife habitat within the KFO consists of approximately 3,003,541 acres of terrestrial uplands and 112,002 acres of riparian/wetland systems. Of these, 365,213 acres of uplands and approximately 2,900 acres of riparian/wetlands are managed by BLM. Within these areas, the presence and interspersion of many habitat types support a large number of wildlife species. Elk, mule deer, pronghorn, bighorn sheep, mountain lion, raptors, and many nongame species, including migratory birds, are in abundance. The diversity and populations of fish and wildlife throughout the KFO provide considerable recreational opportunity and economic benefit. A minimum of 60 species of mammals, 220 species of birds, seven species of amphibians, one reptile, and 20 species of fish occur regularly in the KFO (BLM 1984). The species discussed characterize the fish and wildlife resources of the KFO and emphasize those species that are most important to the BLM KFO in its land management (**Table 3-9**). These include game species, species vulnerable to impacts, or species with high economic or recreational value. The special status species are discussed in **Table 3-10**.

Aquatic Resources

Aquatic Habitat

Aquatic habitats in the KFO consist of both lentic (still, as in ponds and lakes) and lotic (moving, as in streams and rivers) resources. Many of the lotic habitats within the KFO have been mapped. Not all of the perennial aquatic habitats support fisheries, but it is very likely that most all of the perennial waters support some abundance of aquatic insects. Amphibians are scattered across the landscape and may occur either exclusively or seasonally in a variety of aquatic habitat types. The CDOW and BLM have identified stream reaches that provide habitat for fish species and that are perennial within the KFO.

Table 3-9
Fish and Wildlife Species of Primary Interest in BLM's Environmental Planning

Species	Rationale for Key Designation
	BIRDS
Ducks, geese, and other waterfowl	Economic and recreational value
Golden eagle	High interest and protected by law
Upland game birds	Economic and recreational value
Great blue heron	Uses concentrated nesting areas
Migratory birds	High interest and protected by law
Other raptors (prairie falcon, osprey, red-tailed hawk, Swainson's hawk	High interest; top of food chain species
	FISH
Coldwater gamefish	Recreational value
Warm water gamefish	Recreational value
	MAMMALS
Bighorn sheep	High economic and recreational value
Black bear	High interest, economic, and recreational value
Elk	High interest, economic, and recreational value
Moose	High interest, economic, and recreational value
Mountain lion	High interest, economic, and recreational value
Mule deer	High economic and recreational value
Pronghorn antelope	High economic and recreational value
White-tailed prairie dog	High interest; association with federally listed black-footed ferret

Fish and aquatic wildlife habitat administered by the BLM within the KFO consists of approximately 148 miles of perennial streams and 2,900 acres of lake/wetland systems. Within these aquatic systems, the diversity of habitats and differing elevations in which aquatic systems reside, dictate the presence of a diverse array of fish and amphibian species.

Aquatic Species

The primary aquatic species in the KFO are invertebrates, fish, and amphibians. Invertebrates and aquatic plants provide the foundation of the aquatic food chain in which fish and amphibians are predators. The primary data on aquatic species throughout the KFO are collected during PFC surveys, which evaluate the presence of aquatic organisms and plants as part of the evaluation of Standard 5 (water quality).

A mere handful of amphibians occur in the KFO planning area. The extreme cold temperatures and arid climate are not conducive to cold-blooded animal survival. These species are apparently widespread in distribution but few in numbers. The boreal toad and northern leopard frog are discussed in more detail in Section 3.1.6, Special Status Species.

Fish

The KFO contains an important fishery resource in both streams and lakes. The fishery resource can be divided into two areas: streams and rivers that contain naturally reproducing populations of game fish and lakes and reservoirs that contain some naturally reproducing populations that are supplemented with fish stocked by the CDOW. The predominant fish species in the small tributary streams in the KFO planning area is the brook trout. The major game fish in the Colorado River is the rainbow trout. In addition to rainbows, some brown, brook, and cutthroat trout occur in lesser numbers. All of the fish have naturally reproducing populations in the Colorado River. CDOW stocks some cutthroat and rainbow trout in the Colorado River below Kremmling and near Hot Sulphur Springs.

The rivers in the lower elevations of North Park are dominated by brown trout and contain some brook and rainbow trout. Middle Park contains several large reservoirs that provide important recreational fisheries. Rainbow trout and kokanee salmon are the two major fish species that occur in the reservoirs. Other game fish found in the reservoirs include lake, brown, cutthroat, and brook trout. Most of these game fish populations are maintained by CDOW stocking programs. Several lakes in North Park contain valuable fisheries. Lake John has a good population of brown, rainbow, and cutthroat trout. The Delaney Lakes contain excellent brown and rainbow trout populations. In addition to these reservoirs, there are several other lakes in North Park that contain stocked populations of rainbow trout.

Terrestrial Resources

Terrestrial Habitats

Terrestrial species use all the vegetation types discussed in Section 3.1.4 and, except for extreme specialists, tend to respond to the aspect and character of a habitat, shaped by vegetation, topography, precipitation, soil type, and elevation, which ranges from 7,000 feet to 11,000 feet. The variety of wildlife habitats includes sagebrush grasslands, sagebrush mixed shrub, mountain shrub, pinyon-juniper, aspen, and conifer forests. Lower elevation habitats range from semiarid salt desert

shrub communities, badlands and greasewood flats, to sagebrush/grass and pinyon/juniper communities. Forest/woodland habitats are composed of pinyon/juniper woodlands, aspens, and coniferous (spruce/fir/lodgepole) forests at the higher elevations. Within the RMP planning area boundary, the BLM manages 12 percent of the land, 64 percent of which is shrubland, two percent is aspen, four percent is pinyon/juniper, and 17 percent is coniferous forest.

Some habitat is fragmented (on a small scale for the size of the landscape) as a result of infrastructure associated with urbanization, oil and gas development, and roads (ranging from two-lane highways to faint two track routes). Areas with favored browse species, such as bitterbrush, aspen regeneration, snowberry, serviceberry, and winterfat, or that are in important big game winter range, have heavier use levels or poorer vigor than areas where these features are lacking or inaccessible due to steep slopes or snow depths.

Key Terrestrial Wildlife

The key terrestrial wildlife is primarily birds and mammals (**Table 3-9**). The LHAs, Rocky Mountain Bird Observatory, and GIS data maintained by the CDOW provide information on terrestrial wildlife distribution in the KFO. In addition, CDOW maintains statistics on big game harvests, recreational use days, and population trends.

Birds

Upland game birds common to the KFO planning area include dusky grouse and greater sage-grouse. Dusky grouse are widely distributed throughout the higher elevation woodlands and mountain meadows. Because dusky grouse are extremely difficult to count accurately, population estimates are unavailable at this time. Greater sage-grouse occupy the lower elevation sagebrush-dominant rangelands throughout the KFO planning area and are discussed further under special status species.

The numerous streams, rivers, reservoirs, ponds, and associated riparian vegetation provide excellent habitat for a wide variety of waterfowl and shorebirds. Great blue herons and puddle ducks, including mallards, pintails, gadwalls, green-winged teal, and American widgeon, are common throughout the aquatic habitats in the KFO planning area. Waterfowl production occurs throughout the KFO. North Park is particularly important because it is second only to the San Luis Valley in its annual production of ducks (USFWS 2004). The breeding population of ducks in the KFO planning area is unavailable at this time. Shorebirds are common in association with the numerous water bodies throughout the KFO. Killdeers, American avocets, willets, and Wilson's phalaropes are among the more common species found in the KFO planning area.

Raptors (birds of prey) are abundant. Prairie falcons, red-tailed hawks, osprey, northern harrier, Swainson's hawks, and golden eagles are the more common raptors breeding and nesting in the area. Precipitous rock formations, large trees, and

mountain meadows provide suitable nesting habitat for these species. The numerous songbirds and small mammal populations provide the raptors' prey base. Woodland nesting species such as goshawks, Coopers hawks, and sharp-shinned hawks, are common in the forested areas.

Various species of other important migratory birds summer, winter, or migrate through the area. The habitat diversity provided by the broad expanses of sagebrush (interspersed with patches of desert shrubs, coniferous forest, aspen and riparian/wetland values) support many species. The most abundant and characteristic species include mourning doves, common nighthawks, horned larks, house wrens, sage thrashers, green-tailed towhees, Brewer's sparrows, and sage sparrows.

Big Game Species

Mule deer, pronghorn antelope, and Rocky Mountain elk are the most common large mammals found in the KFO. Mule deer and elk occupy higher elevations, usually forested habitat, during summer and then migrate to lower elevation sagebrush dominant ridges and south-facing slopes in winter. BLM-administered public lands provide the vast majority of winter range available to deer and elk in the KFO. Critical winter ranges for elk, mule deer, and pronghorn antelope are essential to the survival of these species in the KFO. Mule deer typically concentrate in the winter along Peterson Ridge, the western foothills of the Medicine Bow Mountains, and along the major highways surrounding Kremmling (Map 12–Elk Range, and Map 13–Mule Deer Range, **Appendix G**). In 2005, CDOW estimated the deer population to be 7,250 in North Park and 24,300 in Middle Park (including the lower Colorado River drainage); the elk population is estimated at 8,170 in North Park and 10,244 in Middle Park. Antelope use the sagebrush dominant ridges and valleys within the KFO and usually occupy public lands in North Park and Middle Park year-round. Pronghorn concentrate in the winter along Highway 40 north of Kremmling, east of Wolford Mountain, north of the Arapahoe Refuge around Cowdrey, and in the Laramie River Valley (Map 14–Pronghorn Range, **Appendix G**). The current population of pronghorn in North Park is estimated at 1,960 and in Middle Park 670 (Martens 2006; Yost 2006).

Moose and bighorn sheep occur in more limited numbers within the KFO. Moose concentrate in the Laramie River Valley, northeast Grand County along major streams and water bodies, and in Jackson County along major rivers and their tributaries, such as the Michigan, Colorado, and Illinois (Map 15–Moose Range, **Appendix G**). In 2005, CDOW estimated 640 moose in North Park and 260 in Middle Park (Martens 2006; Yost 2006). Bighorn sheep primarily occur on USFS and Rocky Mountain National Park lands bordering the KFO. Habitat supporting bighorn sheep is primarily pinyon/juniper woodlands and adjacent mountain shrub habitat, where topography plays the most important role in locations used by this species (Map 16–Bighorn Sheep, **Appendix G**). Habitat improvements on BLM and state lands along Trough Road (near Inspiration Point) have been made in preparation for the release of bighorn sheep proposed for 2007.

Other Key Mammal Species

Several other key mammal species are found within the KFO. These include black bear, mountain lion, and white-tailed prairie dog, as well as several other species discussed in Section 3.1.6. The documented overall range for black bear encompasses most of the KFO, with the exception of the interior area of Grand and Jackson Counties. Summer and fall concentrations in North Park occur between Owl Mountain and Gould Mountain and most of northwest Larimer County, especially around Bull Mountain. In the Middle Park region, summer concentrations are along Rabbit Ears Range, Fort Creek, and Willow Creek. In the fall, they migrate about five to ten miles south to the area around Grouse Mountain and west of Vasquez Mountain (Map 17–Black Bear Range, **Appendix G**). The overall range of the mountain lion is mapped as the entire KFO, with the exception of the interior area of Jackson County (Map 18–Mountain Lion Range, **Appendix G**). No known areas of human conflict with mountain lions have been mapped in GIS by the CDOW within the KFO.

White-tailed prairie dog towns, which provide potential habitat for black-footed ferrets, are in the interior of Jackson County and northwest Larimer County (Map 19–White-Tail Prairie Dogs, **Appendix G**). They are most abundant in the area surrounding the Arapahoe Wildlife Refuge. This species is found primarily on lands that contain salt desert shrub and mountain shrub habitats. White-tailed prairie dog towns create unique vegetative conditions that provide potential habitat for mountain plovers, black-footed ferrets, and burrowing owls (sensitive species discussed in Section 3.1.6).

B. Characterization

Indicators

The primary indicators of health of aquatic animals and their habitats on BLM-administered public lands are Standards 2 and 5 of the standards and guidelines. Primary indicators of health of terrestrial animals are their population numbers, the conditions of the individuals that make up these populations, the age structure represented within the population, and the population's distribution relative to its historic range. These are data that are tracked by the CDOW for game animals and, increasingly, for key species of nongame animals (CDOW 2002).

The BLM, in managing the habitat used by these populations, uses a different set of measurements, such as the condition of shrubs, forbs, and grasses that make up the habitat used by key animal species. Indicators of condition include estimating overall vegetative cover, in absolute terms, or using a relative comparison between portions of the habitat that are available and those unavailable to foraging animals. The vigor and production of individual plants, and various plant indicators may also be evaluated. In evaluating plant indicators, species composition (e.g., do the species that provide forage or the species that indicate overgrazing predominate?), and the form of forage plants (e.g., do they branch freely or is their growth form clubbed and indicative of heavy feeding by herbivores?) are assessed. These are the sorts of

information that are reflected in the discussions of terrestrial habitat condition. The assessment of Standard 3 considers the presence of noxious weeds and other undesirable species, species composition, species and successional stage diversity, age and spatial distribution, and habitat connectivity and fragmentation for native plant and animal communities.

Trends

Wildlife Habitat

Beginning in 1998, approximately 236,200 acres of public land managed by the KFO and included in the RMP revision area have been evaluated using the standards and guidelines. Application of these standards is the primary tool for determining the condition and trend of wildlife habitat within the KFO. Evaluations were conducted using livestock grazing allotments as the unit of area to which the standards were applied. This figure represents about 62 percent of the total public land and 75 percent of the total livestock grazing allotments included in the RMP revision area.

These evaluations were conducted by a team of resource management specialists who applied the standards and guidelines to these acres using livestock grazing allotment boundaries and then jointly determining whether or not the land was meeting the standards. If not, the interdisciplinary team jointly determined why and then formulated possible solutions to reverse this trend.

Standard 2: Riparian Systems, Standard 3: Healthy Plant and Animal Communities, and Standard 4: Special Status, Threatened, and Endangered Species, were applied to the wildlife species known to use the evaluated areas. Some of the indicators for these three standards important to wildlife and applied to evaluate the areas include the following:

Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance, such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment and provides forage, habitat, and biodiversity. Water quality is improved or maintained. Stable soils store and release water slowly.

Indicators:

- Vegetation is dominated by an appropriate mix of native or desirable introduced species;
- Vigorous desirable plants are present;
- There is vegetation with diverse age class structure, appropriate vertical structure, and adequate composition, cover, and density; and
- Streambank vegetation is composed of species and communities whose root systems are capable of withstanding high streamflows.

Standard 3: Healthy productive plant and animal communities of native and other desirable species area, maintained at viable population levels commensurate with the species' and habitats' potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations and ecological processes.

Indicators:

- Noxious weeds and undesirable species are minimal in the overall plant community;
- Native plant and animal communities are spatially distributed across the landscape with a density, composition, and frequency of species suitable to ensure reproductive capability and sustainability;
- Plants and animals are present in mixed age classes sufficient to sustain recruitment and mortality fluctuations;
- Landscapes exhibit connectivity of habitat or presence of corridors to prevent habitat fragmentation; and
- Diversity and density of plant and animal species are in balance with habitat/landscape potential and exhibit resilience to human activities.

Standard 4: Special status, threatened, and endangered species (federal and state) and other plants and animals officially designated by the BLM and their habitats are maintained or enhanced by sustaining healthy native plant and animal communities.

Indicators:

- All the indicators associated with the plant and animal communities standard (Standard 3) apply.
- There are stable and increasing populations of endemic and protected species in suitable habitat; and
- Suitable habitat is available for recovering endemic and protected species.

A list of all five standards and guidelines and their indicators is in **Appendix C**.

The assessments discussed above indicate that nearly all public land was meeting standards for land health. Of the 236,200 acres of public land habitat assessed, only 12,800 acres, or five percent of the total assessed acreage, was not meeting land health standards. The team of resource specialists who conducted the assessments determined that livestock grazing was the primary reason for the acreage not meeting standards. Livestock overgrazing, primarily grasses and forbs, was adversely affecting wildlife habitat in the areas not meeting standards. In all cases where standards were not being met due to livestock grazing, the team recommended implementing management actions necessary to reverse the trend toward meeting all five land

health standards. Some of these actions included reducing livestock numbers, changing season of livestock use, and constructing facilities to improve livestock distribution.

Most habitat in the plan revision area that was assessed in this process is sagebrush steppe vegetation, now widely recognized as a very important vegetative type for a variety of wildlife species. This habitat type provides yearlong habitat for a variety of species and critical winter habitat for others. Several species of songbirds, small mammals, and birds of prey depend on the sagebrush during the breeding season, while others, such as mule deer, Rocky Mountain elk, and pronghorn, spend critical winter periods in this vegetative type.

One of the most important wildlife species, if not the most important, that depends on the sagebrush vegetative type is the greater sage-grouse. The downward trend of greater sage-grouse and its sagebrush-dominated habitat throughout its historic range has become a focus of wildlife managers and land managers in recent years.

The trend of the assessed public land habitat is stable; that is, most habitat is in a desirable condition or is at least headed in that direction. The assessed lands were determined to be meeting land health standards that applied to wildlife habitat and populations. The habitat assessed was determined to be in good condition based on the composition, structure, and vigor of the vegetation. The species of wildlife and their population levels expected to occupy the assessed habitat were either observed during evaluations or documented by discussions with CDOW, livestock operators or others familiar with the assessed areas.

Wildlife Populations

Wildlife population trends will be addressed using 1984 as a benchmark since this is the year the Kremmling RMP was approved and implemented. Population estimates for l984 for a variety of important wildlife species are listed in the1984 Kremmling RMP. The CDOW provided these estimates, which will be used as baseline since the period from 1984 through 2005 will be used to establish population trends for the species for which data are available.

As mentioned earlier, these species are of high interest to the CDOW because of their economic and recreational values. Because of this high interest, the CDOW maintains accurate population estimates for these species. Population estimates for other wildlife, such as greater sage-grouse, are maintained because of the current interest in this species and because its numbers are relatively easy to estimate each year as compared to other species (CDOW 2006).

All the species discussed below depend on public land habitat managed by the KFO for at least part of their annual life cycle.

Birds

Waterbirds

Waterfowl and shorebird populations fluctuated greatly between 1984 and 2005 due to climate. This group of birds is more dependent on annual moisture than any other wildlife since they depend on wetlands and open water habitat for breeding. Waterbird populations have been high during wet years and low during dry years. Because of these fluctuations, the population trend is stable, with no large measurable differences in 1984 and 2005 levels.

Golden Eagles

These important raptors appear to be stable in numbers. Numerous active golden eagle nest sites occur on both private land and public land within the KFO. In addition to breeding season, some golden eagles remain in the area year-round. Population levels throughout the KFO appear to be stable, as golden eagles can be readily observed in all vegetative types, especially during spring and summer.

Upland Game Birds

The two important upland game bird species inhabiting the KFO are dusky grouse and greater sage-grouse.

Since 1984, dusky grouse populations have increased in years with favorable weather during the nesting season and have decreased during cold and wet nesting seasons. Habitat for this species has not changed to any large extent since 1984, although some timber harvest has occurred in dusky grouse habitat. The current population of dusky grouse within the KFO is considered stable to increasing.

Greater sage-grouse populations have fluctuated greatly between 1984 and 2005 in both Middle Park and North Park. The CDOW counted sage-grouse males on strutting grounds annually between these years. According to these counts, 1984 sage-grouse populations were at their lowest levels recorded between 1984 and 2005. Sage-grouse males counted in 1984 totaled 466 in North Park and 190 in Middle Park. In 2005, 1,289 male sage-grouse were counted in North Park, and 310 were counted in Middle Park. As is obvious from these numbers, the trend in sage-grouse populations within the KFO is increasing (North Park Greater Sage-grouse Working Group 2000; Middle Park Greater Sage-grouse Working Group 2001).

With the recent interest in the long-term well being of greater sage-grouse and the sagebrush ecosystem, both the CDOW and BLM have committed to ensuring that this species remains a high priority for management (BLM 2004b). Population goals outlined in both the Middle Park Greater Sage-grouse Conservation Plan and the North Park Greater Sage-grouse Conservation Plan will be used as objectives for maintaining viable sage-grouse populations and their habitat.

Migratory Birds

Migratory bird populations will include all birds not considered in other narratives in this report. These are primarily songbirds that inhabit all habitat types within the KFO.

Most information collected since 1984 for this group of birds was gathered from the sagebrush steppe habitat type. Since 1984, four intensive inventory efforts to determine bird species composition and use of the sagebrush steppe have occurred in Middle Park. Results of these efforts have indicated the trend of both migratory birds and their habitat is stable. The obligate bird species expected to be found in the sagebrush habitat type were documented in sufficient numbers to indicate a stable or increasing trend. Habitat conditions for these species were also stable; the vegetative composition and structure necessary to sustain breeding populations of the birds using these habitats were present during the inventories and continue today.

Raptors

The KFO supports a variety of birds of prey, including kestrels, prairie falcons, peregrine falcons, Swainson's hawks, red-tailed hawks, Cooper's hawks, goshawks, and sharp-shinned hawks. The wide variety of habitats available in the KFO offers nesting and hunting habitat for these species.

Inventory and monitoring efforts to determine the status of raptors within the KFO has been accomplished periodically since 1984. Nest sites have been located for most of the species listed above and then checked for nesting activities in subsequent years. These monitoring efforts have been conducted throughout the KFO at least periodically since 1984. Population trends for these species appear to be stable, with most suitable habitat being occupied during the breeding season.

Fish

Coldwater Game fish

The four trout species that occupy suitable aquatic habitat within the KFO are the brook trout, Colorado River cutthroat trout, German brown trout, and rainbow trout. The only trout native to Colorado is the Colorado River cutthroat trout, which is a special status species. This classification is due to the long-term reduction in pure strains of this species and the amount of former habitat now occupied by other trout species.

With the exception of the Colorado River cutthroat, the population trends for the trout species are stable within the KFO. The CDOW stocks numerous lakes and streams in the area because of the high demand for recreational fishing.

Colorado River cutthroat population status is stable to increasing because of the recent interest in reversing the downward trend of this species in Colorado. The CDOW, cooperating with the BLM and the USFS, has in recent years reestablished Colorado River cutthroat populations in historic habitat throughout Colorado. Since

the early 1980s, the BLM and the USFS have emphasized the protection of aquatic habitat over conflicting uses where this important species exists.

Mammals

All but one of the species addressed in this section are classified as big game animals by the CDOW. These species are extremely important due to the high level of public interest in them for their recreational value. The recreational opportunities provided by big game animals in the KFO equates to high economic value to the CDOW and to the economy of the local communities.

Mule Deer

BLM-administered public land within the KFO provides critical winter habitat for mule deer. Nearly all public land in this area is occupied by deer during part of the year, with winter use being the most significant. Mule deer depend on the sagebrush steppe and mountain shrub habitats for survival during winter.

Mule deer population grew from 1984 to 2005. Deer population levels were extremely low during the early 1980s, well below the carrying capacity of their habitat and below population objectives established by the CDOW. In 1984, the mule deer population in North Park was estimated at 3,000 and in Middle Park at 10,000 (including the Lower Colorado River drainage). The 2005 mule deer population was estimated at 7,250 in North Park and 24,300 in Middle Park (including the Lower Colorado River drainage). The 2005 population levels for deer are slightly above the CDOW objectives for both North Park and Middle Park.

Rocky Mountain Elk

As it does with mule deer, the BLM-administered public land within the KFO provides critical winter habitat for Rocky Mountain elk. Although elk can tolerate deeper snow during winter, most winter habitat is the sagebrush steppe-dominated BLM land, where winter tends to be milder.

Elk populations increased from 1984 to 2005. The 1984 elk population was estimated at 5,000 in Middle Park and 3,600 in North Park by the CDOW. By 2005, elk numbers had increased to 10,244 in Middle Park and 8,170 in North Park. Although elk numbers were somewhat higher in the late 1990s and early 2000, liberal hunting seasons have helped reduce the numbers to the 2005 levels. The elk numbers are above the CDOW objectives in both Middle Park and North Park. Because of the potential for competition with domestic livestock for forage, the large increases in elk numbers from 1984 to 2005 were not always welcomed by the agricultural community, land management agencies, or the CDOW.

Pronghorn

Pronghorn numbers steadily increased within the KFO from 1984 to 2005. Pronghorn have historically occupied North Park but have been yearlong residents in Middle Park only since the late 1970s. Pronghorn historically occupied Middle Park but were decimated by market hunters in the late 1800s and only rarely visited

the area until the late 1970s when migrants from North Park began to stay in Middle Park year-round.

In 1984, the CDOW estimated pronghorn numbers to be 200 in Middle Park and 800 in North Park. The CDOW estimated 2005 pronghorn numbers at 670 in Middle Park and 1,960 in North Park. Pronghorn numbers were slightly above the CDOW objectives for 2005.

Moose

Moose were introduced into southeast North Park in the late 1970s, and this population has continued to expand both their range and their numbers. Moose use BLM-administered public land within the KFO only occasionally, mostly in riparian and wetland habitats on National Forest lands. The moose population was estimated at 200 in North Park in 1984 and none in Middle Park. By 2005, the moose population had increased to 640 in North Park and 260 in Middle Park.

Bighorn Sheep

Bighorn sheep have been recently reintroduced in North Park and are proposed for reintroduction in Middle Park. The sheep in North Park occupy a tract of BLM habitat in the western portion of North Park. In Middle Park, the CDOW has proposed reintroducing bighorns near the mouth of Gore Canyon, where they are likely to occupy BLM-administered land in the release site area during winter. The trend for this species is likely to be increasing, assuming the reintroductions are successful.

Black Bear and Mountain Lion

Population estimates for these species are lacking due to the difficulty in accurately counting them. CDOW biologists recently said that populations of these species are stable and likely to be increasing.

White-Tailed Prairie Dogs

This species is important because its colonies provide habitat for black-footed ferrets, a federally listed endangered species. White-tailed prairie dog towns are present on BLM-administered public lands in North Park but none exist in Middle Park. Prairie dog towns are important since reintroductions of black-footed ferrets into suitable towns are a high priority within the BLM.

The number of prairie dog towns increased on BLM land in North Park from 1984 to 2005. This increase has been a result in the reduction of prairie dog poisoning on private land and the decrease in interest in shooting prairie dogs for sport.

Forecast

The continued occupation of BLM-administered public land within the KFO by the important wildlife discussed above over the next 20 years will depend on several factors. Three important factors will determine the long-term viability of public land habitat within the KFO to support these species, as follows:

- **The intensity of the demand for recreation offered by the public land—** More leisure time means more time for recreation on public lands. Recreation, including camping, OHV use, hiking, hunting, and wildlife viewing, can have adverse impacts on wildlife. All these activities are expected to continue to increase on public land within the KFO.
- **The loss of habitat or fragmentation of habitat—**This occurs with development of private land adjoining public land habitat. Indirect impacts include the use of these public lands for infrastructure, such as access roads, power lines, and domestic water developments.
- **The demand for developing energy resources on public lands that provide important wildlife habitat—**This factor is particularly important in North Park because this area offers the highest potential for mineral development within the KFO. Oil, gas, coal bed methane, and coal deposits exist throughout North Park, and large-scale development of these resources will have negative impacts on wildlife and wildlife habitat in this area.

Along with these potential negative impacts on the species that inhabit the KFO, wildlife displaced due to loss of private land habitat will seek habitat on undeveloped public land. This is a major concern because of the transformation of agricultural lands into subdivisions and related facilities necessary to support an increase in population within the KFO. These areas will no longer offer the wildlife habitat benefits they historically provided. Displaced wild animals are likely to seek and use undeveloped public lands when habitat on private lands is lost. Carrying capacities of these public lands must then increase to support the additional animals that will seek the undeveloped public lands to continue to survive in the long term.

3.1.7 Special Status Species

Special status species are those plants and animals having populations that have suffered significant declines. These declines may result from habitat loss and habitat modification and from changes in competition, predation, or disease. Habitat loss, drought, and modification from human activities are the primary causes of declining populations, particularly of species that are highly adapted to specific ecological niches. Such species may or may not be legally protected by federal or state agencies. BLM land management practices are intended to sustain and promote species that are legally protected and prevent species that are not yet legally protected from needing such protection.

A. Current Conditions

Special status species are those with populations that have declined to the point of substantial federal or state agency concern. Species discussed in this section have been listed by the USFWS or the State of Colorado or have been placed on the Colorado BLM State Director's Sensitive Species List (**Table 3-10**). The USFWS manages threatened and endangered species and designated critical habitat, in cooperation with other federal agencies to support recovery. For listed species that

Table 3-10
Special Status Species

BIRDS			
Species	***Status***	***Species***	***Status***
Bald eagle	FT, ST	Columbian sharp-tailed grouse	BLM-S, SC
Least tern (interior population) ▲	FE, SE	Ferruginous hawk	BLM-S, SC
Mexican spotted owl	FT, ST	Greater sage-grouse	BLM-S, SC
Piping plover▲	FT, ST	Long-billed curlew	BLM-S, SC
Whooping crane▲	FE, SE	Mountain plover	BLM-S, SC
Western yellow-billed cuckoo	BLM-S, C, SC	Northern goshawk	BLM-S
Barrow's goldeneye	BLM-S	White-faced ibis	BLM-S
Black tern	BLM-S	Western snowy plover	BLM-S, SC
Burrowing owl	ST		
FISH			
Bonytail*	FE, SE	Pallid sturgeon▲	FE
Colorado pikeminnow*	FE, ST	Razorback sucker*	FE, SE
Greenback cutthroat trout	FT, ST	Colorado River cutthroat trout	BLM-S, SC
Humpback chub*	FE, ST		
AMPHIBIANS			
Boreal toad	SE	Northern leopard frog	BLM-S, SC
PLANTS			
North Park phacelia	FE	Harrington beardtongue	BLM-S
Osterhout milkvetch	FE	Low northern sedge	BLM-S
Penland alpine fen mustard	FT	Northern twayblade	BLM-S
Penland beardtongue	FE	Pale blue-eyed grass	BLM-S
Ute ladies'-tresses orchid	FT	Porter feathergrass	BLM-S
Slender moonwort	C	Slender cottongrass	BLM-S
Green sedge	BLM-S	Weber's sawwort	BLM-S
MAMMALS			
Black-footed ferret	FE, SE	River otter	ST
Canada lynx	FT, SE	Wolverine	SE
Gray wolf	FE, SE	Townsend's big-eared bat	BLM-S, SC

*Water depletions in the Upper Colorado River and San Juan River Basins may affect the species or critical habitat in downstream reaches in other states.
▲ Water depletions in the South Platte River may affect the species or critical habitat in downstream reaches in other states.
BLM-S: BLM sensitive species
FE: Federally endangered species
FT: Federally threatened species
C: Federal candidate for listing as threatened or endangered
SC: State species of concern
SE: State endangered species
ST: State threatened species

have not had critical habitat identified and designated, the BLM cooperates with the USFWS to determine and manage habitats to support the species. Candidate species are managed to maintain viable populations, thereby preventing them from being listed by the federal government.

Species identified by the State of Colorado and Colorado BLM are treated similarly. The BLM, the USFWS, and the State of Colorado have developed formal and informal agreements to guide the management of species within the KFO. Consultation is required on any action proposed by the BLM or another federal agency that affects a listed species or modifies critical habitat.

There are 21 federally listed species in the KFO and two candidate species. Eight species have not occurred on BLM-administered lands or do not have suitable habitat on BLM lands within the KFO, and they will not be discussed further: the Colorado butterfly plant, black-footed ferret, greenback cutthroat trout, Mexican spotted owl, Penland alpine fen mustard, Uncompahgre fritillary butterfly, Ute ladies'-tresses orchid, and yellow-billed cuckoo. In addition, the five endangered fish species do not occur within KFO but are addressed when there are any water depletions from the Upper Colorado or South Platte Rivers.

Within the KFO, the distribution of most of the special status species is generally known from LHA comments, CNHP and CDOW GIS data, Rocky Mountain Bird Observatory, field surveys, and other reports. Inventories have been completed for some of the listed plant, fish, and wildlife species. Specific management direction to influence habitat components leading to species recovery is integrated into BLM management plans. No critical habitat has been designated for any species within the KFO.

Plants

The USFWS lists six plant species within the KFO are listed as federally endangered, threatened, or candidate. Penland alpine fen mustard occurs at the extreme southern boundary of the KFO on USFS lands, approximately 40 miles from public lands managed by the KFO. Furthermore, this species requires alpine tundra habitat above 12,000 feet, none of which occurs on BLM-administered public land within the KFO. The Ute ladies'-tresses orchid has been recorded in eastern Larimer County outside the KFO. This plant occurs at 4,265 to 5,250 feet, and no BLM-administered public land below 7,600 feet occurs in Larimer County within the KFO. Slender moonwort is found in forest habitat with old disturbance, forest edges, and meadows above 8,500 feet. There is no occurrence reported on BLM-administered public land and there are no confirmed sites within the KFO. The "probable cases" reported in Summit and Grand County are on National Park land and National Forest land. The closest confirmed case is in Clear Creek County, approximately two air miles from Grand County.

North Park phacelia occurs in central Jackson County and northwest Larimer County, primarily on BLM-administered public lands. It grows on barren exposures

where the Coalmont Formation forms outcrops of sandy soil or ledges. The species grows most abundantly on steep, sparsely vegetated, and erodible slopes, such as on the sides of deep ravines (USFWS 1986).

Osterhout milkvetch and Penland beardtongue are both indigenous to Grand County and are found primarily on BLM-administered public lands. Osterhout milkvetch prefers selenium-rich clay soils derived mostly from Niobrara and Pierre Shale. The plant occurs in alkaline clays between 7,500 and 7,700 feet and typically grows on relatively flat areas and barren knolls (USFWS 1992). Optimum habitat for Penland beardtongue appears to be in runoff channels shaded by deeply cut banks.

In addition, eight plant species on the Colorado BLM State Director's Sensitive Species List are known to occur within the KFO. Porter feathergrass and Weber's sawwort are located at the extreme southern boundary of the KFO on USFS lands, approximately 40 miles from public lands managed by the KFO. No habitat exists for these plants on BLM within Summit County. Low northern sedge occurs in northern Summit county on USFS lands, and northern twayblade occurs in Summit, northeast Grand, and western Larimer Counties on USFS and National Park lands. Both species are found in moist forest habitat above 8,700 feet (very little of this habitat occurs on BLM-administered land within the KFO). Slender cottongrass has been recorded in Rocky Mountain National Park, and green sedge, slender cottongrass, and pale blue-eyed grass are all found in northwest Jackson County on USFS land. Pale blue-eyed grass has also been recorded in northwest Larimer County (NatureServe 2006). These species prefer fens, wet meadows, and stream edges. Their distribution on BLM within the KFO is unknown.

Harrington beardtongue is the only BLM-listed sensitive plant within the KFO that has good distribution information. It is located in the southwestern part of the KFO, between Grand, Summit, and Eagle Counties. This species is found primarily in open sagebrush on rocky loam and rocky clay loam soils from 6,800 to 9,200 feet (NatureServe 2006).

Animals

Fish

The five federally endangered fish species (bonytail, Colorado pikeminnow, razorback sucker, humpback chub, and pallid sturgeon) listed in **Table 3-10** do not occur within the KFO, but water depletions from the Upper Colorado River or from the South Platte River may affect the species or critical habitat downstream. The USFWS has determined that any water depletion within the Platte or Colorado Rivers likely jeopardizes the continued existence of these species and adversely modifies or destroys designated critical habitat. For the Colorado and Platte Rivers, the BLM completed programmatic biological assessments in 1994 and 1996, respectively, to address minor depletions. The USFWS issued biological opinions, which provide alternatives for projects to avoid jeopardizing federally listed species and adversely modifying or destroying their designated critical habitat.

The greenback cutthroat trout, listed as threatened, is found in only a handful of headwater streams in the Arkansas and South Platte River drainages. Within the KFO, this species occurs in parts of Larimer County, but it has not been documented in any streams in the Laramie River drainage where BLM-administered public land is located. The closest occurrence recorded by the CNHP in 1993 is approximately 40 miles downstream and southeast of BLM-administered public lands.

In addition, the Colorado River cutthroat trout is a species of concern that is on the Colorado BLM Director's Sensitive Species List and the CDOW list as State Species of Concern (**Table 3-10**). The Colorado River cutthroat trout has been documented on BLM lands in Kinney Creek and Spruce Creek. Both of these populations are in excellent condition with good health and recruitment. Antelope Creek and Little Muddy Creek have been identified as having Colorado River cutthroat trout, but sampling on BLM-administered lands in 2004 (Muddy Creek) and 2006 (Antelope Creek) found no cutthroat. For a complete list of streams containing Colorado River cutthroat trout within the KFO, refer to the Range-Wide Status of Colorado River cutthroat trout (Hirsch et al. 2006).

Amphibians

The boreal toad *(Bufo boreas boreas)*, once common in montane habitats between 7,000 and 12,000 feet in the southern Rocky Mountains, has experienced dramatic population declines over the past two decades. It is presently listed as a state endangered species in Colorado. The USFWS had classified the southern Rocky Mountain population of the boreal toad in 1995 as a candidate species and found it to be "warranted but precluded" for federal listing. In 2006 this designation was removed while the distinctness of the southern Rocky Mountain population is reevaluated. Most boreal toads within the KFO occur at the periphery on USFS lands (NatureServe 2006). Very few occurrences have been recorded on BLM-administered public lands in the last 10 years. These include Pole Creek in west Larimer County (last observed in 1998) and Pole Creek in east Grand County (last observed in 2004).

The northern leopard frog *(Rana pipiens)* is on the Colorado BLM Director's Sensitive Species List and the CDOW list as a State Species of Concern (**Table 3-10**). Typical habitats include wet meadows and the banks and shallows of marshes, ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches (NatureServe 2006). Habitat for this species exists throughout the KFO on BLM lands. A well documented population occurs along Antelope Creek in Grand County.

Birds

Of the birds listed in **Table 3-10**, only three are regularly addressed on BLM-administered public lands within the KFO. These include the bald eagle, greater sage-grouse, and northern goshawk. The least tern, piping plover, and whooping crane are not found in the KFO but are addressed for any actions that result in water depletions from the North Platte River in Jackson County. The remaining species in

Table 3-10 are not addressed further because they are either rare or historical occurrences, or they have no suitable habitat on BLM-administered public lands within the KFO.

Bald eagles, listed as federally and state threatened, occur throughout the KFO on or adjacent to BLM-administered public lands near major rivers, lakes, and reservoirs with tall trees, such as cottonwoods. Bald eagles are primarily winter residents, but several active nests occur within the KFO, including the Laramie, Colorado, Blue, and Williams Fork Rivers, and Muddy Creek and Troublesome Creek.

Northern goshawk *(Accipiter gentiles)* is a BLM sensitive species that occupies coniferous and riparian forests and occasionally shrublands. Two active nest sites have been recorded within the KFO on BLM-administered public lands: Green Ridge in Jackson County and Inspiration Point in Grand County. Probable sightings have also been reported north of Kremmling and east of Granby in Grand County. Areas with suitable habitat on BLM-administered public land are surveyed annually to identify new nest sites.

Greater sage-grouse, a BLM sensitive species, inhabits much of the KFO on BLM-administered public lands (Map 20–Greater Sage-grouse, **Appendix G**). Sage-grouse are found only in areas where sagebrush is abundant because it is a critical component for this species, providing both food and cover. In 2005, the USFWS announced that it had completed its status review of the greater sage-grouse throughout its range and determined that the species does not warrant protection under the ESA at this time (Western Association of Fish and Wildlife Agencies 2006). In Jackson County there are approximately 54 active leks (2004 data), 31 of which are on BLM-administered public land. In Grand County there are 16 active leks and three inactive (2006 data). Eight of those 19 leks are on BLM-administered public land. Sagebrush habitat in Jackson County is largely intact, and there is little threat of fragmentation. Currently oil and gas development and related infrastructure is low, but in 2006 there was an increased interest in coal bed methane exploration. In Grand County there is a high risk of habitat fragmentation and loss due to urban development and related infrastructure, particularly at the east end of the county. Three local working groups cover the KFO—Eagle/South Routt, North Park, and Middle Park—and each group developed a local conservation plan that sets forth a strategy for the long-term management of sage-grouse in their area.

Mammals

Gray wolves *(Canis lupus)* once inhabited Colorado but were eradicated from the state by the mid-1930s. Over the past decade, the USFWS has reintroduced gray wolves into Wyoming, Idaho, Montana, New Mexico, and Arizona. Wolves, especially single males, can disperse over long distances, and some observers believe it is only a matter of time before wolves start migrating into Colorado from the north and south. In February 2006, district wildlife managers with the DOW sighted what was probably a wolf about 10 miles south of the Colorado-Wyoming border, north of the community of Walden in Jackson County (within the KFO). Although the

USFWS has not added the gray wolf to the Jackson County list, it may only be a matter of time before they do so.

Black-footed ferrets, once ranging statewide, seemed never to have been abundant in Colorado. Their habitat included the eastern plains, the mountain parks, and the western valleys in grasslands or shrub lands that supported some species of prairie dog, the ferret's primary prey. Although no ferrets have been recorded in the past 50 years within the KFO, a few active white-tailed prairie dog towns exist on BLM-administered public lands and private lands and on the Arapaho National Wildlife Refuge in Jackson County. These areas may be large enough to support reintroducing the black-footed ferret. If the USFWS adds ferrets to the Jackson County list, it is likely that the BLM will have to consider impacts on this species if it is reintroduced. The USFWS has black-footed ferrets listed as occurring only in Larimer and Eagle Counties within the KFO. However, no white-tailed prairie dog towns are large enough in these areas to support ferrets.

Canada lynx are generally restricted to extremely isolated areas of the mountains of the central portion of the state. They prefer uneven-aged stands of coniferous forest with relatively open canopies and well-developed understories. Occurrences are scattered throughout the KFO but primarily occur on USFS lands. Lynx reported on BLM-administered public lands are generally just passing through the area to more suitable habitat. Habitat on BLM-administered public land is on the edges adjacent to USFS. Of the total habitat mapped on these lands in the KFO (approximately 34,000 acres), only about 20 percent is designated as winter habitat and the remaining 80 percent is designated as other habitat.

Wolverines are mammals of the dense forest, but they may follow their considerable appetite into open country. In Colorado, historical and recent reports show nearly all wolverines are from higher elevations in areas of heavy timber. Most wolverines within the KFO occur at the periphery on USFS lands. Few occurrences have been recorded on BLM-administered public lands in the last 30 years, and very little habitat exists for this species on BLM-administered public lands within the KFO.

River otters *(Lutra canadensis)* are a Colorado threatened species. They most likely were present in most if not all major drainages in Colorado, but by the early twentieth century they had been extirpated from the state. In 1976 the DOW began to restore populations to several drainages, including the Upper Colorado River. River otters on or adjacent to BLM-administered public lands within the KFO are generally found on most major drainages, including the Laramie, Illinois, Michigan, Colorado, Fraser, Williams Fork, and Blue Rivers. Several smaller creeks, primarily within Grand County, are also mapped as overall range for river otters (Map 21–River Otter Range, **Appendix G**). Important winter range for this species is found on the Laramie, Colorado, Williams Fork, and Fraser Rivers (Map 21–River Otter Range, **Appendix G**).

Townsend's big-eared bat can be found throughout Colorado except on the eastern plains. Habitat includes mines, semidesert shrub lands, caves, and structures in woodlands and forests up to and above 9,500 feet. This species most likely occurs in parts of Larimer County within the KFO, but its presence on BLM-administered public lands is not known.

B. Characterization

Indicators

Primary indicators for special status species are their population numbers, population viability, and habitat stability. For most of the special status species, habitat loss and fragmentation have been and remain the primary cause of their imperiled status. Some of these species have also suffered from historic efforts to extirpate them, and some suffer competition or predation from species that have expanded their range or that have been introduced. By definition, the populations of all special status species have historically suffered downward trends. Management efforts by the BLM, USFWS, CDOW, and others have reversed the downward trend for a number of these populations, but none of the populations are near their historic levels and most remain at levels that are biologically insecure, regardless of their legal status. In addition to continued threats from habitat loss and fragmentation, variability in habitat condition is an ongoing factor in the distribution and density of these special status species. For example, population viability for special status plant, fish, and amphibian species varies with hydrologic conditions. Soil conditions further influence the populations of plants. The recent drought has reduced the amount or quality of habitat in some areas, further stressing populations of these species.

Trends

Animals and plants that have been classified as special status species have experienced serious downward trends in their populations and habitats in recent times. Of the species listed in **Table 3-10**, the following have been documented as occurring on BLM-administered public land within the KFO:

Birds

- Bald eagle
- Greater sage-grouse
- Northern goshawk
- White-faced ibis

Mammals

- Canada lynx
- River otter
- Townsend's big-eared bat

Fish

- Colorado River cutthroat trout

Amphibians

- Northern leopard frog

Plants

- Harrington beardtongue
- North Park phacelia
- Osterhout milkvetch
- Penland beardtongue
- Pale blue-eyed grass

Population data for most of the species listed above from 1984 to 2005 indicate most species inhabiting pubic land within the KFO are either stable or in an upward trend. Sketchy data for pale blue-eyed grass and Townsend's big-eared bat make a trend determination difficult and should be left at unknown at this point. Further research and inventory efforts are needed to establish a trend for these species.

Population data collected by the Kremmling BLM and the CNHP for all other species listed above indicate that these are stable or expanding in range and population numbers.

Forecast

The long-term viability of these species depends on the same factors listed in Section 3.1.5. In summary, these factors could affect habitat and population levels for special status species. Those species with federal protection, that is, with ESA protection, are likely to continue to survive since laws mandate that, when possible, no adverse impacts affect them. The species without ESA protection are protected by agency policy or other regulations that will offer sufficient protection for their long-term viability.

Whether special status species can increase or at least remain stable in the long term will also depend on continued inventory and monitoring efforts by land managers and wildlife managers to identify and eliminate threats to their habitat and populations. These efforts are also necessary to identify and protect new populations that are currently unknown.

3.1.8 Wildland Fire Ecology and Management

A. Current Conditions

Current funding levels for fuels treatment projects have begun to decrease from earlier levels just a few years ago. This trend is seen as long term. Other funding sources will need to include CDOW, the Mule Deer Foundation, the Rocky Mountain Elk Foundation, the Habitat Partnership Program, and any others. The result of using some of these cooperators is that areas identified for treatment may be beyond the identified WUI of the Community Wildfire Protection Plans. Fuels mitigation needs to include the larger landscape. Current mandates and direction look away from those areas that affect the WUI because of biomass buildup.

Fuel loading exceeds 40 tons per acre in many places within lodgepole pine and mixed-conifer forests. The cost per acre for large landscape-type treatments is greater than current budgets allow for a short interval versus over many years, and these treatments still may not be able to accomplish the necessary goal.

Fire History

The fire season usually starts in May and continues through September. Fire activity generally peaks in July, which is the primary season, but will vary depending on weather patterns, such as late spring and summer thunderstorm activity and precipitation amounts, which directly influence fire occurrence and acres burned. A wide variety of vegetative mix exists throughout the range of the landscape that encompasses the KFO. Throughout this range recent and past disturbances have created varied ecosystem qualities that have evolved over time.

The complex regional topography in the KFO area results in considerable variation in vegetation patterns, storm patterns, and burning conditions. The number and size of wildland fires in the KFO area are relatively small in recent history. The twenty-year average for wildland fires (1981-2000) is 2.75 fires for 125 acres burned per year. Roughly 93 percent of these fires are less than 100 acres, and only one fire burned as much as 1,000 acres in this period.

Spruce/Fir Forests: Fire intervals in spruce/fir forests are variable, ranging from decades to hundreds of years, with the longer intervals being more typical. Due to the long fire return interval, wildland fire suppression activities in this vegetation type have not significantly changed the composition, structure, and function of these forests.

Mixed-Conifer Forests: The naturally cool, moist environment of these forests makes them relatively fire resistant, but under very dry conditions, fire is usually of high intensity due to the naturally high density of trees and high fuel loading on the forest floor. Historically, median fire return intervals in the warm, dry mixed conifer forest were about 20 to 30 years. Fires play a major role in shaping the composition, structure, and function of these forests and had a big effect on the abundance and distribution of overstory and understory plant species. The current condition in

many of the warm, dry mixed-conifer forests where timber harvest, fire suppression, and livestock grazing activities have occurred have had similar effects by thinning the vegetation and keeping the understory species in check. The effect has had a significant impact on the composition, structure, and the function of these forests. Timber harvest of old growth Douglas-fir has changed the abundance and distribution of this species and has created opportunities for white fir to become more dominant.

Aspen Forests: Current fire research on the aspen forests in the southwestern part of Colorado indicates historic mean fire intervals of 18 to 48 years. Other studies indicate that there remains a lot of uncertainty about fire intervals and fire intensities of aspen forest. The naturally cool, moist environment associated with these forests makes them relatively fire resistant, so most fires quickly die out. Under very dry conditions, high-intensity fires occur, particularly in stands with high amounts of ground fuels and a heavy conifer component.

Pinyon/Juniper Woodlands: Frequent, light surface fires characterize pinyon/juniper woodlands with fire return intervals greater than 25 years. Long-term fire intervals are characteristic for stand-replacing fires and indicate that when these fires occur they tend to be large and very intense.

Lodgepole Pine Forests: These areas tend to support wildland fires on a large scale at a moderate to long return interval. The combination of fuel loadings in these areas, under weather conditions that would allow them to burn and an ignition source is a fairly rare instance. Because the instance of fire returning to these areas is infrequent, the fuel bed tends to develop to a point where, when conditions are right, the fires that result will be of high intensity. The origins of the current stands are thought to be a product of large intensity fires between 1890 and 1910. During this period these fires probably were not considered catastrophic due to the openness of the landscape and fewer inhabitants in the area. Currently the mountain pine beetle is having a devastating effect on mature pines, and the result is increased fuel loading. If those same areas burned today in large-scale high intensity fires, they could result in the loss of life, property, and resources.

Grass Sagebrush Community: The most predominant vegetation type in the KFO has a fire history interval that is largely unknown, but recent fire occurrence data from 1981 to 2000 suggests that there is a lower rate of natural ignitions in this fuel type than in the timber vegetation types (lodgepole pine B-2 polygon and pinyon-juniper B-3 polygon). This vegetation type, in most instances within the planning area, needs specific weather regimes to burn in relation to the availability of the fuels.

3.1.9 Cultural and Heritage Resources

A. Current Conditions

Since 1977, the KFO has been completing Class I, II and III cultural resource inventories for ground-disturbing projects on public and private lands within the KFO planning area. Discovered cultural sites have been recorded and evaluated for eligibility to be listed on the NRHP. Continued land development, land exchanges, recreational developments, grazing projects, and university research has resulted in an ever-increasing database of inventory reports and cultural resource records.

Three landscape units are identified with the KFO planning area: North Park (Jackson County), Middle Park (Grand and Summit Counties), and the Laramie River Valley (Larimer County). Approximately XX acres have been culturally inventoried in the North Park Unit, and approximately XX historic properties have been recorded. Approximately XX historic properties have been recorded within the Middle Park Unit, and approximately XX historic properties have been recorded within the Laramie River Valley Unit.

B. Characterization

Cultural resources include prehistoric and historic archaeological and architectural resources, as well as Native American traditional cultural and religious properties.

Prehistoric properties include lithic scatters, quarries, temporary camps, extended camps, wickiups, hunting/kill/butchering sites, game processing areas, tree scaffolds, eagle traps, vision quest sites, caves, rock art panels, trails, and isolated finds. Historic properties include homesteads, trails and roads, oil shale extraction and production facilities, irrigation ditches, reservoirs, mining sites, corrals, line camps, cabins, trash scatters, aspen art carvings, and isolated finds. Together these properties represent human use of the area by Native Americans and Euro-American cultures from the PaleoIndian period (11,500 BC) through the present. See **Appendix D** for a detailed narrative of the KFO's cultural resource background.

The cultural program supports the other BLM renewable and nonrenewable resource programs by completing cultural inventories in areas of proposed ground disturbance, taking into account both the direct and secondary effects of the project proposal. Cultural sites discovered during inventory are evaluated for eligibility to be listed on the NRHP and protected through site avoidance where possible. If avoidance is not possible, testing for NRHP site eligibility and mitigation of impacts may be necessary. Consultation is completed through the Section 106 process. This is a reactive process that accounts for direct impacts from identified projects but fails to address the impacts on sites from natural disturbances, such as wind and water erosion, intrusion by animals, development and maintenance activities, and human intrusion, including theft and vandalism. Limited site patrol and stabilization completed by the KFO cultural staff protect and preserve only a few well-known cultural sites.

Trends/Forecasts

The conditions of the historic and prehistoric resources within the KFO are generally declining and the information contained therein is slowly being degraded and forever lost. This is due to the vulnerability of cultural resources to natural and human-caused impacts, their inherent nonrenewable status, and the overwhelming numbers and a lack of federal funding to anticipate and execute research work.

The Ute tribes have indicated that KFO is part of their ancestral homeland, thereby increasing the potential of traditional cultural properties and sacred sites. At present, only two specific locations have been identified as sacred/religious sites by the Ute tribes. Other known vision quest sites, eagle traps, and battle locations could be of interest to the Utes, the Arapaho, and the Shoshone.

3.1.10 Paleontological Resources

Paleontological resources constitute a fragile and nonrenewable scientific record of the history of life on earth. BLM policy is to manage paleontological resources for scientific, educational, and recreational values and to protect these resources from adverse impacts. To accomplish this goal, paleontological resources must be professionally identified and evaluated, considering paleontological data as early as possible in the decision making process. Paleontological resources will be managed according to the BLM 8270 Handbook and BLM Manual for the Management of Paleontological Resources, and any interim BLM IM and instruction bulletins that pertain.

A. Current Conditions

The affected environment for paleontological resources is the KFO. Paleontological resources are integrally associated with the geologic rock units in which they are located. Detail of these associations is provided in **Appendix E**. If extensive excavation on a certain formation in one geographic area results in significant paleontological resources, excavations throughout the formation could produce fossil material as well. The geographic extent of the KFO area contains 59 named formations at the surface, 23 of which are known to contain fossils (Armstrong and Wolny 1989). However, these formations have differing potentials to contain *significant* fossils. Caution must be exercised when comparing fossils to rock units because **Appendix E** reflects only the paleontological work conducted in certain areas; other areas may also contain fossils but have not been examined and evaluated (Armstrong and Wolny 1989). The potential for paleontological resources is noted through the use of the following three condition definitions, as described in the BLM 8270 Handbook (Map 22–Paleontological Map, **Appendix G**).:

2. Classification. Classification is a ranking of areas according to their potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. These rankings are used in land use planning and to identify areas that may warrant special management or special designation, such as ACECs. Public lands may be classified based on their potential to contain such fossils, using the following criteria:

- **Condition 1—**Areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. Consideration of paleontological resources will be necessary if the Field Office review of available information indicates that such fossils are present in the area.
- **Condition 2—**Areas with exposures of geological units or settings that have high potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. The presence of geologic units from which such fossils have been recovered elsewhere may require further assessment of these same units where they are exposed in the area of consideration.
- **Condition 3**—Areas that are very unlikely to produce vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils based on their surficial geology, igneous or metamorphic rocks, extremely young alluvium, colluvium, or aeolian deposits, or the presence of deep soils. However, if possible, the depth bedrock may be expected should be noted in order to determine if fossiliferous deposits may be uncovered during surface-disturbing activities.

Either Condition 1 or Condition 2 may trigger the formal analysis of existing data before authorizing land use actions involving surface disturbance or title transfer. Condition 3 suggests that further paleontological consideration is generally unnecessary. This determination should be recorded in the planning or NEPA documentation process to aid in assessing and mitigating impacts on individual land use actions occurring within the framework of the land use plan. Classifications should be developed by the Field Office in consultation with the Regional Paleontologist.

Paleontological localities are areas of known paleontological resources with defined boundaries, usually associated with excavation and data recovery efforts. Although a comprehensive paleontological inventory has not been carried out for the KFO, government, academic, and private industry personnel have studied paleontological resources in various contexts, principally in relation to surface-disturbing development activities. At least 40 groups and institutions from the 1850s to present have collected fossils in the KFO (Armstrong and Wolny 1989). Many of these have collected in the KFO area. In that time, over 1,000 paleontological localities have been documented for the KFO region. Fossils recovered from these localities represent a diverse array of plants, invertebrates, and vertebrates. Scientific activity has occurred during the past several years and there are currently active paleontological use permits issued for the BLM-administered land within the KFO area.

B. Characterization

Paleontological resources are indicated by both the presence of and potential for these resources. The current trend of paleontological resource use permits and scientific activity would likely continue or increase slightly in the future. Clearances and monitoring surface-disturbing activities, land tenure adjustments, and scientific

research are anticipated to be the primary means of identifying paleontological localities.

3.1.11 Wilderness Characteristics

The BLM will update its existing wilderness inventories and identify any BLM-administered public lands outside of existing WSAs that contain one or more wilderness characteristics (naturalness and outstanding opportunities for solitude and for primitive and unconfined recreation).

Citizens Proposed Wilderness for BLM Lands. In 1994, Colorado conservationists presented to BLM with a bound volume entitled "*Conservationists' Wilderness Proposal for BLM Lands,*" which included the compilation of numerous citizen wilderness inventories and the area-by-area justification for the statewide Colorado Wilderness Proposal. In 2001, based on new citizen inventories, the Colorado Wilderness Proposal was updated and included two areas within the KFO: Platte River and Troublesome.

Platte River: The New Conservationists' proposal included the tiny portion of the canyon rim of the North Platte River at the southern end of the USFS's Platte River Wilderness and included an additional 3 acres. The North Platte River here carves a rushing whitewater canyon called North Gate Canyon, a favorite with rafters and fishermen. This small addition would preserve part of the area's scenic backdrop as viewed from the river.

Troublesome: The New Conservationist recommended an additional 1,365 acres to be added to the current Troublesome WSA. "This area would encompass a substantial portion of the virgin watersheds straddling the Continental Divide between Middle and North Parks" (Citizens' Wilderness Proposal for Colorado, Reference Book-2001 Revision).

Table 3-11 details the Colorado Wilderness Proposal areas for BLM-administered public lands.

Table 3-11
Colorado Wilderness Proposal Areas for KFO

Proposal Name	Colorado Wilderness Proposal Recommendation (in BLM KFO Acres)	BLM WSA Acres
Platte River	33	30
Troublesome	9,615	8,250

Under the authority of 43 USC 1712 (Sec. 202 of FLPMA), the BLM has discretion to manage lands to protect and maintain wilderness characteristics. The BLM will continue to manage public lands according to existing land use plans in the event

new information, such as that in the form of new resource assessments, wilderness inventory areas or "citizens proposals," is considered in this land use planning effort.

3.1.12 Visual Resources

VRM provides a mechanism for protecting the spectacular visual setting of the planning area, while allowing for other uses. Protecting the visual resources within the planning area is important because the area's scenery is valued by users and can be negatively affected by other resource uses. Human-caused changes to the geological and biotic features of the landscape can also add to or detract from the scenic value of the area. FLPMA requires that the public lands be managed in a way that will protect the quality of scenic values. Levels of management vary by area, resource, and use (Map 23–Visual Resource Management Areas, **Appendix G**).

A. Current Conditions

While portions of the planning area are still largely undeveloped, an increase in development and urbanization has changed the landscape over the last 22 years, which is most evident within Grand and Summit Counties. Other development in the planning area includes public gravel pits, oil and gas development in North Park, and range improvements, such as fencing and water developments. Recent changes include the development of the Wolford Reservoir on the Muddy Creek drainage in Grand County. An upgrade to the power corridor on the east side of Grand County is not expected to change the viewshed. A new utility corridor is being proposed through the southern section of Grand County. In addition, temporary impacts on the landscape are occurring due to the mountain pine bark beetle. The middle-ground viewshed is changing due to the removal of dead trees. To minimize the changes to the viewshed, timber removal areas are designed to look like naturally occurring clearings. However, subdivisions in heavily forested areas are becoming more visible with tree removal.

The scenic quality of the planning area is of national significance and an important part of the local and state economy. Many people live and play in the planning area because of its remoteness and visual qualities. The visual setting is an important part of the lifestyle in both North and Middle Parks.

The planning area now has two state Scenic Byways, the Cache la Poudre-North Park and the Colorado River Headwaters. In addition, the Colorado River Headwaters Byway recently became a National Scenic Byway. The Cache la Poudre-North Park Byway starts east of Walden on Colorado Highway 14 and ends in downtown Fort Collins. The Colorado River Headwaters Byway starts in Grand Lake and ends at State Bridge and Colorado Highway 131. Both tourists and locals drive through the landscape expecting to see open mountain vistas, rushing water, high-forested slopes, and vast rolling sagelands. To most travelers the scenery or visual resource is an important part of their trip.

Based on the Visual Resource Inventory (1980), the landscapes vary greatly within the planning area. The landscape consists of mountains, ridges, narrow and broad river valleys, rolling hills, numerous lakes and reservoirs, and sand dunes.

Two mountain parks dominate the planning area, North Park and Middle Park.

North Park is predominately an open landscape composed of flat valleys and rolling hills. Volcanic activity, faults, landslides, and erosion have created the current landscape. They have produced landscape features seen as ridges, isolated mountain peaks, rock outcrops, and waterways. Middle Park is a synclinal basin, surrounded by mountain ranges. Vast amounts of volcanic activity, faulting, landslides, and erosion have altered the park. These activities produced a diverse landscape, leaving features such as canyons, isolated mountain peaks, rocky outcrops, rounded hillsides, and flat valleys. These features, together with vegetation, create a variety of landscape compositions. Most of the public lands in the KFO planning area provide the foreground and middle-ground landscapes to scenic mountain vistas. Developments on these lands have affected the vistas seen when driving through the area.

When traveling through North Park, the views are predominantly of open rolling hills covered with grasses and sagebrush. The mountains surrounding the park and the foothills bordering the park draw the attention of travelers. The foothills are open sagebrush on the southern exposure and pine and aspen forests on the north exposure. Throughout the center of the park, water features and ridges break up the sagebrush hillsides. Creeks and rivers wind through the hills, displaying riparian vegetation communities and flowing water. Four lakes in the northwest portion of the park give this area additional variety. The ridges that run across the park are composed of rock outcrops and open sage grasslands. The rock outcrops and higher relief break the line of the rolling rounded hills.

Other features in North Park are the result of man's activities. The town of Walden is the center of activity for the North Park area, although there are a few other small towns (Rand, Gould, Coalmont, and Cowdrey). Some additional effects of human activities are the oil and gas fields east of Walden and the power lines cutting across the landscape. From the major traffic routes, these activities are visible but do not dominate the landscape. The visitor still can see the countryside, get a feeling of remoteness, and enjoy the mountain vistas.

Middle Park has more landscape diversity than North Park. When traveling through the area, one observes a landscape that is constantly changing. Travelers see the open rolling sagebrush hills, but these do not dominate all views. In the northwest, the rolling hills are interrupted by isolated mountain peaks that have rocky south faces and forested north faces. The Colorado River bisects the park in an east/west direction, running through steep-walled Gore Canyon to the west and Byers Canyon to the east. As the river flows out of Gore Canyon, it winds through hills composed of reddish-orange, rocky soil strata. These pinyon-juniper covered hills provide a diversity of color and texture along the riverway. The main highway intersects Byers

Canyon, so travelers see the steep, dark, vertical canyon walls. Several major power lines and a railroad cut across the landscape.

The human features on the east side of Middle Park are mainly the result of tourism. The largest town is Granby; other communities include Hot Sulphur Springs, Grand Lake, Fraser, Tabernash, and Winter Park. The east side provides a ski area, subdivisions, and second home developments, gateway access to Rocky Mountain National Park, and recreational access to three large lakes. Many homes on this side of the county have been built in the forested areas and serve mainly as recreational homes. The human-made features on the west side of Middle Park include the communities of Kremmling, Parshall, Heeney, Radium, Ranch del Rio, and State Bridge. Other features include several isolated communities/subdivisions, large ranches, and many new ranchettes, along with several dude ranches. Three large reservoirs are scattered throughout the west side of the park, giving this area additional variety and interest.

The BLM's VRM system is a planning tool that helps to ensure that actions taken today will benefit the visual qualities associated with the landscape, while protecting these visual resources in the future. The current Visual Resource Inventory, developed in 1980 for the planning area, is insufficient and outdated. The inventory does not reflect the classification of WSAs correctly and thus does not help to protect the visual integrity of these areas. The current inventory is a mitigation tool and follows the measures outlined in the RMP (Chapter 3, page 71, Visual Resources – Limited Management).

B. Characterization

Indicators

The four visual inventory classes represent the relative value of the visual resource. Classes I and II are most valued, Class III is moderate value, and Class IV is of least value. The inventory classes are the basis for visual values, and they will serve as an indicator for visual quality and a baseline measurement for scenic values. Designation and management of VRM classes allows the BLM to control surface-disturbing uses in a manner consistent with natural features and existing uses throughout the planning area. VRM classes are assigned to areas based on the combination of scenic quality, visual sensitivity, and distance zones. VRM Classes I-IV range from completely natural landscapes to landscapes containing extensive human modification. Visual values are considered throughout the RMP process, and the area's visual resources are then assigned to management classes with objectives:

- **Class I Objective.** To preserve the existing character of the landscape, the level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II Objective.** To retain the existing character of the landscape, the level of change to the characteristic landscape should be low.

- **Class III Objective.** To partially retain the existing character of the landscape, the level of change to the characteristic landscape should be moderate.
- **Class IV Objective.** To provide for management activities that require major modification of the existing character of the landscape, the level of change to the characteristic landscape can be high.
- **Rehabilitation Areas Objective.** Areas in need of rehabilitation should be flagged during the inventory process. The level of rehabilitation will be determined through the RMP process by assigning the VRM approved for that particular area.

Trends

The trend for impacts on visual resources within the planning area is increasing due to an outdated and incomplete VRM tool and increased use of the planning area's resources. The BLM planning regulations require the development of VRM objectives. Management changes to the inventory could occur where areas of high quality scenic value intersect an area with a high demand for OHV or mineral use. These areas would be managed appropriately to balance both recreation and visual resource protection. In addition, the trend in rural development and development of subdivisions is likely to have an increased impact on the visual resources.

Forecast

VRM assessment and management will be evaluated during the RMP revision process to ensure compliance with current VRM guidelines established by the BLM, and thus to better manage the visual resources within BLM-administered lands of the planning area. We will need to evaluate the role that an updated VRM could play when considering visual resources in relation to land health objectives.

3.1.13 Cave and Karst Resources

There are no cave and karst resources within the KFO. Thus, the BLM will not be making land use planning decisions to manage these resources.

3.2 RESOURCE USES – CURRENT CONDITIONS AND CHARACTERIZATION

3.2.1 Energy and Minerals

A. Current Level of Use

Coal

No coal is mined in the KFO. Several areas of coal resources with considerable historic mining occur in North Park, and a single small historic mine occurs in northwest Middle Park. Recoverable coal reserves remain in North Park at the Coalmont area and in the McCallum Known Recoverable Coal Resource Area. All coal activity and remaining reserves lie in thick sub bituminous seams in the Coalmont Formation.

Middle Park

Minor coal mining occurred in the 1920s at Coal Mountain in Middle Park. No other coal activity is known there. The USGS (Landis 1959) does not estimate any coal reserves in Grand County. Although present, coal seams at this locality are reportedly too thin and 'dirty' (impure) to make coal mining activity feasible. There are some carbonaceous beds and some minor dirty coal stringers seen rarely in outcrop at the southernmost edge of North Park, and it is possible that some of these may extend a short distance into the northernmost Middle Park.

North Park

Coal reserves in North Park occur in the Coalmont and McCallum areas as described below.

Coalmont Area—Coal resources have been commercially open-pit mined from 1919 to the 1950s and in the early 1960s in the Coalmont area. The Riach bed was the coal seam of commercial interest and varied from 5 to 66 feet thick in the Coalmont mining area. Production of 1.77 million tons is recorded from five mines at the Coalmont town site, with half the production from 1958 to 1960 coming from two mines. Rail transportation ended at the Coalmont area in 1964 with the removal of the rails from Coalmont to Walden, which ended mining interest at that time.

In 1959, the USGS (Landis 1959) estimated sub bituminous grade, near-surface coal reserves at 230 million tons and deep reserves at 254 millions tons in the townships and ranges surrounding the Coalmont area. The USGS currently estimates the coal reserves at the Coalmont mining district to be 177 million tons (Roberts and Rossi 1999).

Recent activity is limited to coal exploration in the 1990s in this area, including the Pole Mountain-Mexican Creek area.

McCallum Area—Considerable coal has been mined in the McCallum area, including the South McCallum and Johnny Moore Mountain areas. The Suddith seam is of commercial interest and varies from 20 to 50 feet thick, with varying depth and dips in the anticlinal and synclinal structures of northeast North Park.

Commercial mining ended in 1993 after rail transportation to Walden was discontinued and the rails were removed from Jackson County by the UPRR. Railhead load out had been located in the town of Walden, with six- to ten-mile road hauls from the mines. Prominent recent commercial mines included the Marr mine (1974 to 1993; 4,088,000 tons of coal mined, currently in the final phases of reclamation); the Bourg Mine (1980 to 1987; 290,000 tons mined, reclamation completed); and the Canadian Strip mine (1975 to 1985; 1,247,000 tons mined, in final reclamation). A new mine was planned to be opened adjacent the Canadian Strip mine for the considerable resources north of County Road 10 at the South McCallum anticline (lease C-27777 and exploration license C-28056) in the 1980s, but lack of reasonable transportation and contracts terminated these plans.

The Suddith seam mined in this area was generally about 50 feet thick, with surface exposure and near-surface resources. Coal quality is reported as sub bituminous B grade, 10,180 Btu's a pound, 0.3 percent sulphur (which is the cleanest coal ever mined in the US), and 6.4 percent ash.

The USGS has defined the McCallum area as a Known Recoverable Coal Resource Area, and it is located in 24 contiguous townships from T. 6-10 north and ranges R. 77-82 west. The Known Recoverable Coal Resource Area includes parts of 408 sections, for a total of 226,015 acres that contain potentially recoverable coal resources. The USGS (Landis 1959) has estimated sub bituminous grade, near-surface coal reserves at 593 million tons and deep coal reserves at 925 million tons (total 1.520 million tons) in the McCallum area. More recent USGS estimates (Roberts and Rossi 1999) for the South McCallum anticline area include 1.152 million tons of recoverable coal.

Fluid Minerals

1). Conventional Oil and Gas

Existing Leasing

There are no oil and gas leases in the Laramie River area of Larimer County or in Summit or Grand Counties (Map 24–Oil and Gas Leases as of May 2007, **Appendix G**).

Jackson County has had and continues to have considerable leased acreage (115,177 acres), including the biggest lease tract holders of Red Willow Production (38,506 acres, 33.4 percent), EOG Resources, Inc. (26,706 acres, 23.2 percent), Nielson and Associates (now Bonanza Creek Energy) (23,170 acres, 20.1 percent), and Lance Lasrich (13,442 acres, 11.7 percent). Red Willow and Bonanza Creek/Nielson Associates continue to be active producers and drillers in the area.

Production

No oil and gas has been produced in Summit or Grand Counties (Middle Park Basin) in the past 20 years. No oil and gas is produced in the Laramie River area of Larimer County (Laramie Basin).

Oil and CO_2 gas (with minor methane gas) is produced in Jackson County (North Park basin). There are four major and 11 minor oil and gas fields in Jackson County. Five of the minor fields are no longer producing, and six are held by just one or two wells. North McCallum and McCallum oil and gas fields are predominately federal minerals and Canadian River and Lone Pine fields are predominately or completely private.

Oil production and shows have occurred in the fields in North Park from the Triassic Entrada Formation and the Jurassic Morrison Formation and from several Cretaceous Formations. The Cretaceous units include the Dakota and Lakota

sandstones of the Dakota Formation; the Niobrara Formation (fracture porosity); sandstones of the Frontier and Muddy Formations (generally these are not considered formations in Colorado, but sandstone zones in the Benton Formation, with the muddy sandstone as the basal sand of the Benton Formation, and the frontier correlating to the uppermost sandstone [Codell Member] of the Benton Formation); and the Pierre Formation (Pierre A and B sandstone horizons possibly correlating to the Hygiene interval of the Pierre Formation in the Denver Basin).

Some methane hydrocarbon gas is produced in the Lone Pine field, from the Dakota and Lakota horizons. Methane was also produced from the Canadian River field early in its life. CO_2 gas is produced in the McCallum and North McCallum fields and in the Cretaceous Dakota and Lakota Formations.

Wandrey and Barker (2006) and Newton (1957) give excellent oil and gas overviews for the North Park basin.

Table 3-12 is a summary of oil and gas field data from 1999 to 2006, with production from Colorado Oil and Gas Conservation Commission database, and federal ownership from a review of field area mineral land ownership. Actual well location and ownership does not necessarily correlate to mineral ownership, as only a general field site review, not a well-by-well ownership review has been made. Thus, current production may or may not occur on federal leases in these fields, but federal ownership percentage will give likelihood of field drainage and future field wells that may be federal. Fields with zero wells and zero production are historic, but no longer productive.

Active Field Histories

The **North McCallum Oil Field** is the oldest in North Park. The discovery well was drilled in 1925, with further Dakota-Lakota wells drilled through the 1940s and 1950s, and also with pay zones in the Morrison Formation. Pierre Formation production was first discovered in 1971, with subsequent emphasis in production from this unit, including drilling a considerable number of new wells, and water flood secondary recovery since 1973 continuing through the present. There has been recent exploration in the Niobrara Formation, with mixed results, and test coring has been made in coals in the Coalmont Formation. Additional shows (either producing or showing potential to produce) have occurred in the muddy sandstone. Secondary recovery techniques exist in the Pierre production, with water injection in selected wells. There are currently 59 active producing oil wells, two active producing gas wells (CO_2), and 40 active injection wells at North McCallum field, mostly in the Pierre Formation, but some Dakota-Lakota production continues.

The field is a doubly-plunging anticline, with a slightly curving northwest-southeast anticlinal axis. The anticline is asymmetric, with a faulted, steep to overturned northeast limb and a gentler southwest limb and an inclined axial plane. Thus the deeper Dakota-Lakota oil pool is offset to the southwest, down the inclined axial

Table 3-12
Oil and Gas Production by field (1999-2006)*

Field Name	Oil Production (in barrels)	Gas Production (in million cubic feet)	Number of Producing Wells	Producing Formations	Percent Federal Ownership
North McCallum	708,846	5,824,904	55	Pierre, Dakota, Lakota, Morrison	95
South McCallum	15,639	3,294,862	8	Dakota, Lakota	100
Lone Pine	161,017	2,100	20	Dakota, Lakota	10
Battleship	68,236	0	5	Frontier, Dakota, Lakota	80
Coalmont	26,424	0	2	Niobrara	75
Michigan River	10,124	0	2	Niobrara, Muddy, Dakota, Lakota	30
Canadian River	3,491	0	7	Niobrara, Dakota, Lakota	10
Butler Creek	2,716	0	1	Frontier	30
Delaney Butte	1,041	0	2	Frontier, Niobrara, Dakota, Lakota	5
Alkali Lake	1,377	0	1	Niobrara	100
Fischer Draw	0	0	0	Niobrara	90
Carlstrom	0	0	0	Niobrara	40
Johnny Moore	0	0	0	Niobrara	100
Grizzly Creek (including Grizzly Creek southeast)	0	0	0	Niobrara, Pierre	75

plane, from the higher Pierre oil pool. This field spans all or parts of 12 sections, with the only nonfederal mineral lands of 320 acres of private, located near the southeast edge of the anticline in sections 7, 13, and 18. The North McCallum field has produced 708,846 barrels of oil and 5.8 million cubic feet of CO_2 since 1999. Biggs (1957), Carpen (1957a), and Sims and Goth (1953) give historic and early geologic descriptions of this field.

The **South McCallum Oil Field** is in northeast North Park, centered on sections 16-22-27-34 in T. 9 N., R. 78 W. It was discovered in 1935 as a Dakota-Lakota CO_2 + oil field in these formations. Sixty-one wells have been drilled in the life of this field, with four oil wells and a CO_2 well currently producing. Production is mainly in the Dakota-Lakota, with one well in the Pierre, but shows have occurred in the Pierre, Niobrara Formations, and the muddy sandstone.

This field is a strongly curved, asymmetric, doubly plunging anticline, trending north-south at its south end and northwest-southeast at the northwest end. The northeast flank is strongly dipping, while the southwest flank is gentler. Carpen (1957b) and Sims and Goth (1953) give historic and early geologic descriptions of this field. It contains all or parts of 10 sections, with 100 percent federal mineral lands within the productive portion of the anticline. The South McCallum Oil Field has produced 15,639 barrels of oil and 3.2 million cubic feet of CO_2 since 1999.

The **Lone Pine Field** in western North Park has 21 wells capable of production, 15 are currently productive and 6 are shut in (capable of producing, but not in production at this time). It was discovered in 1971 and has had 24 wells drilled over its history. Methane gas and oil production is from the Lakota Formation at this time, but previous shows and production have also occurred from the Dakota Formation. Additional shows but no production has occurred in the frontier sandstone and Morrison Formation.

The Lone Pine Field is a north-south oriented, doubly plunging, complexly faulted asymmetric anticline, with thrust offsets to both east and west flanks. It has oil pools along the central anticlinal axis, as wells as on the eastern fault slice near the central portion of the anticline. Wellborn (1977, 1982a) has excellent reviews and detailed structural interpretation of this field.

This field contains parts of five sections, centered over sections 28 and 33 of T. 9 N., R. 81W. It is only about 10 percent in federal mineral ownership, mostly on about 100 acres (s. 33, 34) at the southwest edge of the anticline. The Lone Pine Field has produced 161,017 barrels of oil and 2.1 million cubic feet of methane since 1999.

The **Battleship Field** is in northeastern North Park and currently has five producing wells and two injection wells. The field was discovered win 1954 and originally had 17 wells drilled, with production reported out of seven wells. Production currently is out of the Dakota and Lakota Formations, but there has been production and shows reported from the frontier sandstone also.

This field is also a curving, asymmetric, double plunging anticline, like many other fields in northeastern North Park. The north flank of this anticline is strongly faulted, with moderate dips on its southwest flank. It is a slightly elongate, northwest-southeast trending anticline, and is similar to other anticlines in this area with a steeper northeast flank and a curving anticlinal axis. Grote (1957) gives an early description and analysis of this field, which covers parts of five sections, centered over S. 23, of T. 10 N., R. 79 W. It is 80 percent in federal mineral ownership, with private lands at its northeast corner. The Battleship Field has produced 68,236 barrels of oil since 1999.

The **Coalmont Field** is in southwest North Park and has two producing wells but has had five productive wells in its history. One of the producing wells is just northwest of the field boundary mapped by the Colorado Geological Survey. Current

production is from the Niobrara Formation, but oil and gas shows have also been recorded in the basal Pierre Formation and frontier sandstone.

The Coalmont field is a gentile, broad, north-plunging anticline, truncated by a fault on its southwest side. Early production was from permeable formations on structural traps high on the flanks of the anticline, but current production appears to be controlled by fracture porosity with some fault control in the Niobrara Formation. Severy and Thompson (1953) give early history and geologic analysis of this field, which covers parts of four sections, centered over S. 35, of T. 7 N., R. 81W. It is 75 percent in federal mineral ownership, with some split estate private lands at its northern and southeast portions. The Coalmont field has produced 26,424 barrels of oil since 1999.

The **Michigan River Field** is in north-central North Park. It consists of two producing wells but has had six wells drilled over its history. Production currently is from the Dakota-Lakota Formations. The Niobrara Formation has also had shows and limited production.

Structure is little known, and no published information could be found for it. This field covers parts of three sections, centered over S. 29, of T. 10 N., R. 79 W. It is 30 percent in federal mineral ownership, with some split estate private lands and private mineral lands at all but its northeastern portions. The Michigan River field has produced 10,124 barrels of oil since 1999.

The **Canadian River Field** is in northeastern North Park. It was discovered in 1956 and appears to be en-echelon (structurally parallel) with the north and south McCallum anticlines. Initial methane production, followed by oil production, has occurred in this field. Production was mostly in Dakota-Lakota, with shows in the Niobrara Formation, and the muddy and frontier sandstones. Six wells are currently productive of the 60-plus wells that had been drilled and were once productive.

This is another elongate, curving, northwest-southwest trending anticline in northeast North Park. It is also asymmetric, with a steeper and faulted northeast flank. Saterdal (1957) gives an early description and analysis of this oilfield, which covers parts of six sections, centered at section 11 of T. 9 N., R. 79W. It has about 10 percent ownership of federal mineral land, mainly in small pieces near its center. The Canadian River field has produced 3,491 barrels of oil since 1999.

The **Butler Creek Field** is in western North Park and appears to parallel the Delaney and Lone Pine Fields. Original production dates from 1974, from the fractured frontier sandstone. Shows also occurred in the Mowry, Dakota, Lakota, Morrison, and Entrada Formations. The field currently contains only one productive well but has had two wells drilled over its history. Wellborn (1982b) has an excellent review of this field.

The field is shown on subsurface maps as a small closed high (contour encircled structural high) on the southeast plunging nose of the Delaney Butte anticline, about two miles southeast of the Delaney Buttes field's structural high and center, on the thrust faulted east side of the anticline. This field covers parts of four sections, centered at section 9 of T. 8 N., R. 81 W. It has about 30 percent ownership by federal mineral land, mainly in the southern portion. The Butler Creek field has produced 2,716 barrels of oil since 1999.

The **Delaney Butte Field** is in western North Park and is an elongate east-west anticline. Production is now from the Dakota and Lakota Formations, with two wells currently productive. It has had 16 wells drilled in or adjacent to the field over its history, including wells producing from the frontier sandstone and the Niobrara Formation, and also having shows in the Benton Formation.

The Delaney Butte field structure is an asymmetric northwest-southeast trending anticline, with a steep and thrust faulted northeast flank, plunging to the southeast. The plunging nose undulates, and a minor closed high contains the small Butler Creek field about two miles to the southeast. Wellborn (1982c) has an excellent review of this field, which covers parts of three sections, centered at section 5 and 6 of T. 8 N., R. 81W. About five percent of it is owned by the federal government as mineral land, mainly in the far western and eastern edges. The Delaney Butte field has produced 1,041 barrels of oil since 1999.

The **Alkali Lake Field** is in northwestern North Park. Production is from the Niobrara Formation, with only one well currently productive. It has had three wells drilled over its history, although the current producer is a reentry and horizontal completion of one of the earlier wells. Structure is little known, and no published information could be found for it. This field covers parts of two sections, centered at section 31 of T. 10 N., R. 80W. The field is 100 percent federal land and has produced 1,377 barrels of oil since 1999.

Drilling Activity

No Drilling activity has occurred in the past 20 years in Grand or Summit Counties. Only three exploratory drill holes have occurred in the Laramie River area of Larimer County (Laramie Basin) in the past 20 years, bringing the total number of wells drilled in this area to five, all of which have been plugged and abandoned as dry holes in T. 11 N., R. 76 W.

Activity in new well drilling and reentry and recompletions of existing wells have occurred in the past 10 years and continue to occur in Jackson County (North Park Basin). A field-by-field description follows.

North McCallum—Although a considerable number of new wells have been drilled in the past 20 years, only a handful of new wells have been drilled at this mature field in the past five years. Several in-field development wells, Pierre sand reservoirs near complex structural features, CBM test cores, and a short-lived Niobrara fracture play

have occurred in the past five years. Variation in water injection locations, schedules, volumes and pressures have been utilized to maximize oil production in existing wells.

South McCallum—Several attempted recompletions mostly have been met with casing and hole problems. Test production and recompletion at the newly acquired south end of the field have occurred in the last few years. Electrification of these south end ex-"Wofford" wells has brought the field into better use.

Battleship—Recompletion of one well into a water injection well has occurred, an excess water producer has been plugged, and individual well production is being monitored in this field's production.

Alkali Lake—Recompletion of this well with another horizontal lateral has been planned, but scarcity of rigs has delayed this project.

Coalmont—Recompletion of a well and drilling of a new well as a horizontal Niobrara completion has been planned, but scarcity of rigs has delayed this project.

CO_2

CO_2 production (with condensate oil) occurs in the North and South McCallum fields. No methane gas or insignificant amounts are present in these fields. CO_2 is present in the deeper parts of the fields, primarily in the Dakota, Lakota, and Morrison Formations. A liquid CO_2 plant is present near the North McCallum headquarters facility, where CO_2 production from the oil and gas lessee is sold to the CO_2 plant owners and is shipped via truck to markets.

Coal Bed Methane

CBM exploration and a pilot drilling project is occurring in North Park. A single CBM well, now plugged and abandoned, was drilled in the Coalmont area, but several CBM wells have been drilled and are producing on private mineral lands in the McCallum area.

USGS and other coal resource data indicate that although the Coalmont coal seams are quite thick and are of good quality at the old coal mine and town site of Coalmont, these thick beds quickly split, thin, and become carbonaceous shale away from the old mining center.

Coal resource data in the northern part of North Park indicate that the coal seams at the McCallum area are fairly continuous over several miles to tens of miles and that this resource is thick and extensive enough to be considered a Known Recoverable Coal Resource Area for surface and underground mining over 408 sections northeast of and around Walden. The Known Recoverable Coal Resource Area is in 24 townships from T. 6 - T. 10 north and ranges R. 77 – R. 82 west, and includes 226,015 acres, containing potentially recoverable coal resources.

Considerably greater acreage of these same seams exists in the subsurface in northeast North Park beyond the Known Recoverable Coal Resource Area boundary. This implies that the coal resource is present over much of northeast North Park for a potential CBM play.

Colorado state oil and gas commission records show eight wells are permitted or have been drilled in northeast North Park for this resource. Three federal exploration CBM test coreholes have been permitted (with two drilled and required subsequent plugging) in this same general area.

CBM drilling activity

Several new APDs have been received for CBM completions near Walden. Two test CBM coal cores (of three permitted) near McCallum have occurred on federal lands in the recent past.

Locatable Minerals

Several claimants with small individual placer mining claims, a small group of hard rock lode mining claims with some metal potential, and a large group of recently staked uranium mining claims exist on BLM-managed lands in the KFO. All current mining claims as of June 2006 on BLM lands in the KFO are referenced below.

Jackson County

Gold placer claims, Independence Mountain—Two small individual placer claims exist near the Mitchell Placer interpretative area at Threemile Creek, near the south summit of Independence Mountain in Jackson County. The Mitchell placer mine is a small, early twentieth century area of placer disturbances, with four historic log cabins, where no economic resources were found. Current claimant use to date has been limited to casual use hand work and panning. These claims were located in 1993 and 2000. Some casual use hand shoveling and panning may continue to occur annually. Annual assessment work and paperwork filing continued through 2006.

Lode Claims, Independence Mountain—Twenty-three hard rock lode claims were located in 2003 at the north end of Independence Mountain at the old Caprock claims in Jackson County. This area was previously prospected and drilled for hard rock minerals in the late 1970s and early 1980s. Original claims were located by the Caprock Corporation but lapsed in the late 1980s. The CeeArco Company has filed the current claims at the same location as some of the previous claims.

Grand County

Lode Claims, Troublesome area—502 uranium lode mining claims were located in 2005 as a group in Grand County on the Troublesome Formation, about six miles east and northeast of Kremmling. These claims occur as blocks on Sulphur Gulch, Wolford Mountain, and Cow Gulch areas, likely as a group of speculative paperwork claims. This area was previously studied (Atomic Energy Commission, US Department of Energy) for low level uranium and vanadium resources. Aerial, surface, shallow pit, and drilling exploration occurred at that time. No mining or

economic resources with only trace mineralization was discovered in the previous activity. No surface-disturbing activity is expected, as $100 a year holding fees will likely discourage any activity.

Summit County

There are no mining claims currently on BLM-administered public lands in Summit County. Considerable mining claims occur on USFS-administered lands in Summit County but are not addressed in this analysis.

Larimer County

There are no mining claims currently in the Laramie River area.

Mineral Materials

Sand and Gravel

Considerable sand and gravel deposits exist in the KFO, in Grand, Summit, and Jackson Counties. Some sand and gravel potential also exists in the Laramie River area of Larimer County, but limited BLM land ownership occurs on the highest potential deposits in this valley. Most of the privately consumed gravel resources in the KFO boundary are produced from private lands, with only county consumption (for road surfacing and construction) from BLM lands at this time. The BLM sources include the Inspiration Point, Back Troublesome, and Scholl free-use permit pits in Grand County and from the East Walden and recently permitted Ridge Road free-use permit pits in Jackson County.

Decorative Stone

A small to moderate market for decorative stone and moss rock exists in the KFO. High value resort community primary and secondary home construction is driving this market. High quality decorative stone is not common in the KFO, but three separate rock collection areas are permitted for small sales on BLM-administered public lands. Bull Mountain and Corral Creek contain considerable volumes of salable rock, but Yarmony is largely collected out, with only poor quality rock remaining. No other federal solid leasable minerals of any note occur in the KFO.

B. Characterization

Trends/Forecasts

Coal

Middle Park—No mining activity is likely at this area in the foreseeable future.

North Park— Coal trends/forecasts for the Coalmont and McCallum areas of North Park are described below.

- Coalmont area: No mining activity is likely at this area in the foreseeable future.

- McCallum area: Although a considerable volume of mineable and marketable coal remains on federal lands in Jackson County, the lack of reasonable cost transportation in the area hinders utilization of this resource. Some potential exits for methane gas in the near surface and deeper areas of the McCallum coal area.

Fluid Minerals

Conventional Oil and Gas

Recent leasing interest

New leases over the past year in Jackson County include additions to the northwest at Alkali Lake, to the west at Lone Pine-Delaney Butte-Butler Creek, and to the southwest at Coalmont- Pole Mountain- Grizzly Creek areas. The August 2006 BLM leasing auction included 41,200 acres of requested new leases, including 25,000 acres of split estate (private surface/federal mineral) lands, and 15,000 acres of BLM surface managed lands. Most of the new lease bid acreage was to Craig Settle, Harmon Land LLC, and Contex Energy Co.

Approximately 45,200 acres were requested for oil and gas leasing in 2006 in Jackson County. Grand County has also seen new leasing interest, predominately in the far northwest corner, at the Whitely Peak-Carter Mountain area, and at the west Troublesome WSA. This new leasing interest includes approximately 12,350 acres and is the first leasing interest in Middle Park in a number of years. Almost all of these acres were on split private surface/federal mineral lands. In leasing, Craig Settle bid 2,900 acres, and Harmon Land Co. bid 2,100 acres in Grand County.

Future leasing trends will likely include blocking up producing area extensions and all of the area underlain by coal beds with CBM potential.

Coalbed Methane

Further CBM development is likely, based on the continued testing of the existing and permitted wells and on the availability of the existing limited pipeline and construction of new and increased pipeline capacity. If positive results continue and methods for permittable disposal of excess water are developed, considerable CBM activity may occur in over the 250,000+ acres of subsurface coal in northeast North Park.

Recent Leasing Interest

The recent lease applications give an interesting picture as to potential future interest in CBM in North and Middle Parks. Considerable new lease interest has occurred west and south of the Coalmont and Grizzly Creek areas in southwest North Park and in northwest Middle Park near Whitely Peak and Carter Mountain in Townships 4 - 6 north, and Ranges 80 - 81 west. These areas have previously had minimal or no conventional oil and gas production and interest and barren, buried, or uninteresting structures for conventional oil and gas production. This area has been reported as

having subsurface coal seams and beds. It appears as if much of the recent oil and gas leasing for the KFO and most of the leasing in this specific area is not likely for conventional oil and gas but has CBM potential.

The McCallum coal area has had only slight new oil and gas leasing interest, but this is largely due to most of the area already tied up in leases. Nielson and Associates (now Bonanza Creek), Red Willow, Morris, and Petrostates all have leases over nearly all of the federal oil and gas mineral ownership in the McCallum Area.

Locatable Minerals

No significant future activity is anticipated on BLM-administered public lands in Summit, Larimer, and Grand Counties.

In Jackson County, no significant mineralization or activity is expected with the gold placer claims at Independence Mountain. For the lode claims at Independence Mountain, communication with CeeArco indicates that they have the data from the old Caprock Corp. work, and some metal mineralization exists. Thus, they may be interested in future drilling and exploration at these claims.

Mineral Materials

Sand and Gravel

Continuing trends of urbanization in Summit and eastern and southern Grand Counties and concentration of ownership in agricultural lands into single large ranches in Grand and Jackson Counties yield long-term concerns in availability of sand and gravel in future decades. Some of the Grand County free-use pits are in their last years of material supply and efforts are anticipated in closures and reclamation of the old pits and replacement with new permitting of federal sources for the Grand County Road and Bridge Department. Jackson County is handicapped by limited budget with its low population base and long and expensive haulage from the limited gravel operations available to it. The Jackson County Road Department also continues to search for new federal sources of gravel on BLM lands in Jackson County. Thus, demands are expected to increase on BLM-administered public lands for sand and gravel resources.

Decorative Stone

Continuing demand will likely drive additional sales and the permitting of new areas as they are discovered or requested.

3.2.2 Livestock Grazing Management

A. Current Level of Use

Currently, 337,414 acres of BLM-administered public lands, which is 89 percent of public lands within the KFO, are allocated for livestock grazing. These public ranges are permitted at a level of 35,239 AUMs of forage and 4,447 AUMs of suspended use, for a total allocation of 39,686 AUMs. Of the total 35,239 active AUMs, 4,514

are Section 15 AUMs (leases) and 30,725 are Section 3 permits. Section 15 permits were not included in grazing districts, and Section 3 permits are part of grazing districts. The districts were designated during the passage of Taylor Grazing Act (Map 25–Livestock Grazing Allotment, **Appendix G**).

There are 41,080 acres, or 11 percent of BLM-administered public lands, that are not allocated for livestock use. There are six allotments that have been voluntarily relinquished or that are not attached to private base property: Allotment 7561 Spruce Creek, 7573 Lawson Ridge, 7505 Sulfur Gulch, 7755 Selak E, 7522 Selak, and 7524 Fraser River. These six allotments are unallocated for a several reasons. Allotments 07505 (Sulphur Gulch) and 07561 (Spruce Creek) are critical winter wildlife habitat. The other four allotments are unsuitable for livestock grazing because of forests, steep slopes, rocky terrain, or a combination of these factors. The KFO currently has no vacant allotments.

Within the KFO, there are 254 allotments, composed of 121 permittees and 143 permits/leases. In 2005, 99 percent of the AUMs were allotted for cattle grazing, with sheep and horse grazing accounting for the remaining one percent. Two hundred fifty-one of the allotments are grazed by individual operators, while three allotments are grazed by two operators.

No wild horse areas have been identified within the KFO.

The season of use within the KFO is generally from May through October, with much of the use in spring (May and early June). Spring use occurs on the lower benches and is designed to coordinate with the end of calving on private lands. Summer and fall use (late June through October) generally occurs at higher elevations.

Within these allotments there are many other uses, such as OHV, hunting, and fishing, and resources, such as threatened and endangered species, SRMAs, fens, and ACECs, that require special attention or preference over livestock use. Some of these areas have been fenced off from livestock, while other areas are monitored for livestock impacts.

B. Characterization

Trends

From 1984 to the present, there has been a decrease of 60 allotments and 21 permit/leases. The decreases are due to consolidation and relinquishment of allotments and the sale or exchange of BLM lands.

From 1984 to present, BLM records indicate a decrease of 18,846 acres of BLM administered lands. The decrease is a result of improved technology determining the number of acres of public lands (GIS) and the sale and exchange of public lands.

Forecast

Livestock grazing is expected to continue into the foreseeable future on BLM administered lands within the KFO. However, the number of permits/leases and AUMs may decrease through the sale of isolated tracts of BLM land. Substantial decreases in the number of livestock is expected from the sale of working ranches to hobby ranchers, the continued increase in recreational use of BLM administered lands, and because it is so difficult to make money raising livestock. Most of the pressure on the working ranches is occurring in Middle Park, while the working ranches in North Park and Laramie River have yet to feel the same amount of pressure to convert to hobby ranches.

Key Features

The reduction of livestock numbers combined with implementation of rest and deferred rotation grazing systems should improve the quality of the vegetation and livestock grazing within the KFO.

3.2.3 Recreation and Visitor Services

A. Recreation Management Areas

Special Recreation Management Area

The RMP planning process identifies areas where recreation is the management focus. These SRMAs were traditionally areas that had higher recreation use or required extra recreation investment or where more intensive recreation management was needed. The 2005 revision of the BLM Handbook - H-1610 -1 Land Use Planning Handbook amended the characteristics for identifying a SRMA. SRMAs are now areas identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific "structured" recreation opportunities, such as activity, experience, and benefit opportunities. SRMAs now must have a distinct, primary recreation-tourism market (destination, community, or undeveloped) and a corresponding and distinguishing recreation management strategy. Recreation settings or natural resource settings are prescribed as part of the land use allocation decision. Subsequent implementing actions, as identified in the activity planning framework, are proactive in nature and address management, marketing/visitor information, monitoring, and administration.

The KFO currently has identified two SRMAs, the Upper Colorado River SRMA, at 12,237 acres, and the North Sand Hills SRMA, at 1,450 acres (Map 26–Special Recreation Management Areas, **Appendix G**).

Note that recognition of singularly dominant activity-based recreation demand of and by itself (e.g., heavy OHV use and white water boating), however great, generally constitutes insufficient rationale for identifying new SRMAs.

Extensive Recreation Management Areas

Anything not delineated as an SRMA is an ERMA. ERMAs are public lands where recreation is unstructured and does not require intensive management or significant investments in trails or facilities. This type of undirected or "dispersed" recreation management affords visitors the opportunity to create their own adventure. Visitors receive little in the way of services or developed recreational facilities. Within ERMAs, recreation management is reactive and custodial and addresses visitor health and safety, resource protection and use, and user conflicts. Most public lands within the KFO are managed as an ERMA. The KFO ERMA is characterized by a diversity of natural resource settings and a range of recreation opportunities.

Because recreation is not the primary management objective in ERMAs, the 2005 revision of the BLM Handbook, H-1610-1 Land Use Planning Handbook, clarified that management within all ERMAs is focused on custodial implementation actions that address visitor health and safety, user conflict, resource protection issues, and maintaining appropriate activity participation. Implementation actions are not directed at maintaining or creating particular physical, social, or administrative natural resource setting prescriptions.

The following section describes the general level of recreation use that is occurring throughout the KFO. The sections are broken out into Current Level of Use/Recreation Demand, Recreation Supply, and Recreation Management and Administration. Motorized, Mechanized, and Nonmechanized travel is discussed in Section 3.2.4 – Comprehensive Trails and Travel Management.

B. Current Level of Use/Recreation Demand

Public Land Visitors

North-central Colorado is a world-renowned destination for outdoor recreation enthusiasts. Recreation visitors to the KFO come from three primary sources: 1) local, 2) the Denver metropolitan area and "Front Range" of Colorado, and 3) national and international locations. The BLM is conducting a recreation visitor survey, in cooperation with Arizona State University for high use areas throughout the KFO. Demographic information on visitors to the KFO will be available in fall 2007.

Visitors from the Denver metropolitan area come to the KFO because it is an easy to get to weekend getaway with a lot of diversity in outdoor activity offerings and recreation settings.

Visitors outside of Colorado come to the region from all over the US and from international locations. The KFO can be reached via an easy 90-minute drive from the Denver area on Interstate (I-) 70 and State Route 9.

Resident Customers

Colorado's population has grown significantly in the past 10 years (US Census Bureau 2002), and an increasing number of people are living near or seeking to live near local public lands for a diversity of recreational opportunities characterized by the "mountain resort lifestyle." The region is truly a year-round place to live and work. As a result, public lands administered by the BLM are absorbing increasing recreational demand and use.

Second home owners also cite recreational amenities as the reason for purchasing a second home in the region. The Northwest Colorado Council of Governments completed its second phase of its "Transition in Mountain Communities - 2006" which focused on the resort economies and their secondary effects (Northwest Colorado Council of Governments 2006). The following is a brief summary of the highlights of the study for the different regions within the KFO planning area.

Grand County

- The percentage of homes owned by second homeowners increased by just 1% – from 63% in 2003 to 64% in 2006.
- Grand County second homeowners spend an average of 64 days at their properties each year.
- Second homeowners in Grand County visit their properties an average of 19 days during the ski season and 20 in the summer months of July and August.
- Regionwide, Grand County second homeowners spend the highest average number of days at their properties during the shoulder seasons (13 days April through June, and 13 days September through November).
- 82% of second homeowners in Grand County said they consider their property a vacation home.
- The three main reasons second homeowners purchased in Grand County were the same as in 2003, with the percentages changing slightly:
    1. Recreational amenities (84% in 2003, 80% in 2006).
    2. Scenery/surroundings (72% in 2003, 74% in 2006).
    3. Intend to vacation here for years (64% in 2003, 66% in 2006).

Eagle County

- The percentage of homes owned by second homeowners decreased slightly, from 49% in 2003 to 46% in 2006.
- Eagle County second homeowners spend an average of 64 days a year at their properties.
- Compared with the region, Eagle County second homeowners have the highest average number of days at their property in the winter (28 days December through March).

- Eagle County second homeowners spend an average of 22 days at their property in July and August.
- Among the counties in the study, Eagle County has the smallest percentage (46%) of second homes, with a slight majority of the homes owned by local homeowners.
- 64% of second homeowners in Eagle County said they consider their property a vacation home.
- The three main reasons second homeowners purchased in Eagle County were the same as in 2003, with percentages changing slightly:
    1. Recreational amenities (84% in 2003, 81% in 2006).
    2. Proximity to ski resorts (82% in 2003, 78 % in 2006).
    3. Intend to vacation here for years (70% in 2003, 75% in 2006).

Summit County

- The percentage of homes owned by second homeowners decreased slightly, from 67% in 2003 to 65% in 2006.
- Summit County second homeowners spend an average of 68 days a year at their properties – the highest annual average in the region.
- Second homeowners in Summit County spend an average of 26 days at their properties during ski season, and 19 days in July and August.
- Summit County has the second highest number of visits during the shoulder seasons, after Grand County (11 days April through June, and 12 days September through November).
- Of all counties in the study, Summit has the highest percentage of homes owned by second homeowners, followed closely by Grand County (64%).
- 76% of second homeowners in Summit County said they consider their property a vacation home.
- In Summit County, the top three reasons second homeowners purchased their properties were slightly different in 2006 than 2003, with the third and fourth reasons changing places.

In 2003:	In 2006:
1. Recreational amenities – 85%	1. Recreational amenities – 80%
2. Proximity to ski resort – 82%	2. Proximity to ski resort – 79%
3. Scenery/surroundings – 76%	3. Intend to vacation here for years – 69%
4. Intend to vacation here for years – 63%	4. Scenery/surroundings – 64%

Outside of water-based recreation, which attracts high visitation from across the state and nation, and fall big game hunting seasons, when visitation is high everywhere, the greatest amount of public land recreation visitation occurs daily on public lands near communities. The towns of Granby, Hot Sulphur Springs, Kremmling, and Walden all have public lands bordering them that are used as "backyard" recreation areas by local residents. This use continues to grow exponentially with the rapid growth in the communities themselves.

General Use Figures

Recreation has grown to become the predominant use of local public lands and national forests. Most public land use estimates and activity participation estimates depend entirely on field observations and professional judgment of the recreation staff, and hence, are not scientifically based and are approximate. The 378,000 acres in the KFO receive roughly 308,700 visits per year.

However, for a local recreation use perspective, the adjacent White River National Forest, composed of 2.3 million acres, collects information about visitor satisfaction and use. It received the most national forest visits nationwide, 9.7 million, 6.5 million of which were skier visits.

Recreation Activities

Public lands within the KFO offer a variety of outdoor recreation activities, including land, water, and snow sports activities. Some of the typical recreational activities on public lands include boating and river-based recreation, camping, hiking, horseback riding, mountain biking, OHV use, and cross-country skiing. Migrating and resident wildlife provide plentiful opportunities for hunting, photography, and wildlife observation. Renowned local rivers (Colorado and Blue), streams, and lakes offer boating and cold water fishing opportunities.

Since water-based recreation activities and hunting account for a large and growing amount of visitation on BLM-administered public lands within the KFO, the follow sections provide more detailed information on the types of activities, use-figures, trends, and forecasts. The 2006-2007 visitor survey will provide more information on public land visitation and the activities, settings, and outcomes that visitors desire from public lands within major river corridors and high-use hunting areas.

Water-based Recreation

The Upper Colorado River SRMA provides many outdoor recreation opportunities in a variety of scenic settings. Fishing, float boating, including rafting, kayaking, and canoeing, camping, picnicking, sightseeing, photo taking, hiking, and wildlife viewing may be enjoyed along the corridor. River floating occurs primarily throughout the summer and early fall. Fishing is fair to good year-round. The Colorado Wildlife Commission designated the Upper Colorado River as gold medal waters from Windy Gap to the confluence of Troublesome Creek, providing anglers with an outstanding opportunity to catch large trout. The CDOW has designated the Upper Colorado River from the upper end of Gore Canyon to State Bridge as Wild

Trout Waters, selected to produce wild trout and give anglers an opportunity to catch them. Popular fishing areas along the Upper Colorado River include the access sites at Sunset, Powers, Reeder Creek, County Road 33, Highway 9, Red Mountain, and the Yarmony Trail.

The SRMA can be divided into three sections. The upper most section (12 miles of river), from near Reeder Creek to the confluence of the Blue River, does not receive many float boaters as the water is slow and there are fences across the river to delineate private land. From the confluence of the Blue River to Pumphouse through Gore Canyon (nine miles of river), the river varies from flatwater in the upper five miles to Class VI-V whitewater. Commercial whitewater rafting outfitters are permitted through this segment of river. No permit is required for private boaters. Gore Canyon typically draws a young and adventurous group of kayakers. The improvements in kayaking equipment has helped increase the use of Gore Canyon. The National White Water Championship is held in Gore Canyon each year in August. This has also added to the notoriety of the Canyon and has helped to increase its use. The next stretch is from Pumphouse to State Bridge (14 miles of river) and provides a Class II and III whitewater experience. Most use is concentrated in this area with private and commercial whitewater boaters and anglers. In 2006, no permit was required for private float trips on any section of the Upper Colorado River. However, commercial use is regulated through the SRP Process (see SRP section below).

The Blue River corridor below Green Mountain Reservoir is another area within the KFO where water-based recreation occurs. The Blue River is within a 90-minute drive from the Denver metropolitan area. This 16-mile section of the river from below Green Mountain Reservoir to the confluence with the Colorado River is designated as Gold Medal waters by Colorado's Wildlife Commission to provide outstanding angling opportunities for large trout. The Colorado Department of Natural Resources, CDOW, manages the first 2.5 miles of the Blue River below Green Mountain Reservoir as Wild Trout Waters. These waters are selected to produce wild trout and are therefore not stocked with hatchery fish, giving anglers an opportunity to catch wild trout. This section of the Blue River is also a good place to teach beginning kayakers. The put-in is very steep and difficult, which keeps some users away.

The stretch of the Colorado River within **Byers Canyon** provides another float-boating opportunity and crosses a small section of BLM-administered public land for 2.6 miles of river. However, while fishing occurs year-round, this stretch is limited to kayak use during peak runoff, typically in late May or early June. Difficulty varies with flow. Between 400 and 1,000 cfs, the river is class IV-. At between 1,000 to 2,000 cfs, the river is class IV+; above 2,000 cfs, the river is rated at a class V- (Banks and Eckardt 1999).

The **Fraser River** also has kayak and raft opportunities during high water but has a very short season, usually late May to early June. The entire reach is 9.4 miles long

from Tabernash to the Grand County Road 894 near Granby. When water flows are between 400 and 1,000 cfs, the river is rated at a class III+; when it flows at over 1,000 cfs, the river is rated as class IV (Banks and Eckardt 1999). BLM-administered land along the Fraser River within the Strawberry area is also a very popular fishing site.

There are many other fishing, waterfowl hunting, and wildlife viewing opportunities in the planning area, including Muddy Creek on and below Wolford Reservoir and the Junction Butte Wetlands area.

Use Figures/Trends/Forecasts

Data is fairly good for the **Upper Colorado SRMA** from Pumphouse to Radium. The Pumphouse and Radium Recreation sites were included as Fee Demonstration Sites in the original fee demonstration legislation (Recreation Fee Demonstration Program) in 1999. These two fee sites are no longer designated as "Demonstration" sites and are currently administered in conjunction with the Federal Lands Recreation Enhancement Act. River use is shown in **Table 3-13** below.

River use varies somewhat by water flow. However, because the Upper Colorado River is primarily dam regulated, it sees its heaviest use in August after water in the rest of the state is gone. For example, prime flows for the Arkansas River, Clear Creek, and others usually occur from mid-May to mid-July. When these flows drop below raftable flows, boaters tend to migrate to the Upper Colorado River. Recreation use on the Upper Colorado River from Pumphouse to State Bridge does not really depend on the flows of the Upper Colorado, but more on the drop in flows from other rivers in Colorado.

The **Blue River** below Green Mountain Reservoir is seeing an increase in use from anglers and kayakers. Increased media attention on the Blue River has added to the increase in use. A Blue River working group composed of local land owners along the Blue River, interested citizens, and state and local government representatives have been collecting use data over the past few seasons, which has included field monitoring. This information shows that use on the Blue River is increasing. Hard data was limited before 2006. Local land owners have made continuous observations regarding the increase in use. The BLM does not have any visitor use data on the Byers Canyon stretch or Fraser River.

There will be a continued increase in demand for water-based recreation in the KFO due to the increase in population in Grand, Summit, and Routt Counties and the proximity of the field office to these population centers. There is a waiting list for commercial river activities on the Upper Colorado River, and commercial companies have expressed interest in commercial river opportunities on the Blue River.

Table 3-13
Colorado River Use Totals

Year	Location	Private							Commercial			
			Day Use		Camping		Totals		Boat	Fish	Total Commercial	Total Visitors
		Number of Permits	Number of Visitors	Number of Permits	Number of Visitors	Number of Permits	Number of Visitors	Number of Visitors (Pumphouse and Radium)				
1995									31,380	672	32,052	32,724
1996									35,356	1,018	36,374	37,392
1997									35,966	941	36,907	37,848
1998									37,594	1,719	39,313	41,032
1999	Pumphouse	1,154	3,023	326	1,258	1,480	4,281	4,281	38,803	1,560	40,363	44,644
2000	Pumphouse	2,290	5,905	378	1,369	2,668	7,274	9,013	42,933	1,671	44,604	53,617
	Radium	489	1,229	138	510	627	1,739					
2001	Pumphouse	2,266	5,592	299	985	2,565	6,577	8,379	34,381	1,537	35,918	44,297
	Radium	562	1,311	87	491	649	1,802					
2002	Pumphouse	3,408	7,687	365	1,055	3,764	8,742	11,069	37,801	1,992	39,793	50,862
	Radium	727	1,909	116	418	843	2,327					
2003	Pumphouse	3,559	8,390	384	1,060	3,943	9,450	11,915	32,188	1,745	33,933	45,848
	Radium	785	1,981	142	484	927	2,465					
2004	Pumphouse	3,400	8,039	398	905	3,798	8,944	11,323	29,681	3,552	33,233	44,556
	Radium	777	2,044	110	335	887	2,379					
2005	Pumphouse	3,399	8,681	560	1,406	3,959	10,087	12,811	27,211	2,225	29,436	42,247
	Radium	802	2,217	160	507	962	2,724					

Hunting

Hunting is a major recreational activity in the planning area, generally occurring in the late summer and fall. The planning area receives local, state, and out-of-state visitors.

Hunting-related revenue is a major part of the economic base in Kremmling and Walden, which are highly sought after destinations for big game hunters. Big game animals hunted in the planning area include mule deer, elk, mountain lion, and pronghorn antelope.

As a popular destination for hunting, there has been an increase in motorized travel for scouting and game retrieval. This includes cross-country travel in areas currently designated as open, as well as areas designated as limited to existing routes. Big game hunting for deer and elk is the most popular for the planning area. Colorado is the most popular elk hunting state in the country, with forty percent of the Rocky Mountain elk found in Colorado (CDOW year). Recreational hunters use OHVs, horses, lamas, and other pack animals for accessing remote areas and for retrieving game.

The planning area encompasses 18 Game Management Units with BLM-administered public lands. Fourteen of these are within Grand, Jackson, Larimer, Eagle, and Summit counties. These Game Management Units are popular hunting areas that require licenses which are acquired through a drawing by the CDOW. All Game Management Units within Middle Park and North Park are managed for quality buck hunting. Areas that receive heavy use during hunting season include Dice Hill, Strawberry, Grouse Mountain, Black Mountain, Kinney Creek, Independence Mountain, and Bull Mountain. Due to dispersed public lands, trespass and conflicts on private land can occur. Most private lands are highly sought after hunting areas and are leased to private hunters and commercial outfitters.

Use Figures/Trends/Forecasts

There are some conflicts between commercial outfitters that are permitted through the BLM. This occurs with overlapping permitted areas within the planning area and among commercial outfitters who have private leases but are not permitted on adjoining public lands. While there is no data to support conflicts between private hunters and commercial outfitters, there may be conflicts on small areas of BLM land due to crowding. OHV use during the hunting season, whether by hunters or other recreational users, may also create conflicts, as motorized travel may degrade the hunting experience and opportunities.

C. Recreation Supply

Current Recreation Setting Conditions and Supply

Natural Resource Settings (ROS)—The characteristics of the landscape affect the activities and recreation opportunities (experience and beneficial outcomes) that can be realized by recreation participants. By managing the natural resource setting and

the activities that occur within it, recreation managers produce a range of recreation activity, setting, and outcome (experience and benefit) opportunities.

For the purposes of management, the range of possible combinations of activities, settings, and probable experience opportunities has been represented in terms of a spectrum or continuum, called the ROS. This concept recognizes that the attainment of desired recreational experience and benefit outcome opportunities are actually produced by the physical, social, and administrative natural resource setting characteristics of a recreational area. The ROS is both a classification system and a prescriptive tool for recreation planning, management, and research (Clark and Stankey 1979). The BLM primarily manages using five of the six ROS classes, including primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, and rural. The urban ROS classification does not typically require BLM management restrictions. Rural ROS classes also require very few BLM restrictions. The primitive, semiprimitive, and roaded natural classifications are designed to provide certain types of recreation settings and may require restrictions on use to meet management objectives.

The ROS inventory was documented for the planning area in the 1983 Draft RMP. Seventy-three percent of the planning area was classified as roaded natural and 25 percent was classified as semiprimitive nonmotorized. The remaining two percent was classified as one percent semiprimitive nonmotorized and one percent rural. No ROS objective in the RMP stated that management actions would have to comply with the objectives. Hence, the past 23 years has resulted in an overall shift across the KFO toward a more developed ROS condition. Unmanaged OHV use in some areas has the potential to shift the character of these areas to more developed settings.

Natural Resource Setting Trends—The trend is that natural resource setting classes are shifting from more primitive to more developed setting classes, especially outside of SRMAs where other resources and resource uses are being emphasized. Incrementally most approved management actions did not change the mapped and adopted ROS physical setting class, but cumulatively over 23 years the physical natural resource settings generally become less natural. In addition the changing land uses, including increased, rural growth, visitation, and mechanized/motorized use, all combined to alter the recreation setting classes on public lands.

Public land visitors generally find the physical landscape less natural, more roaded, and filled with more human-made distractions.

Socially, the public lands are generally busier, and the evidence of man is much more noticeable and widespread. This is especially true near communities and popular destinations like the Colorado River or Blue River. Outside of hunting season, many upland areas (Dice Hill, Bull Mountain, Windy Gap, Mule Creek, Yarmony Mountain, Owl Mountain) receive low levels of visitation. During hunting season, use greatly increases and the social setting in these areas are more often

commensurate with the respective physical and administrative settings. However, other upland areas (Wolford Mountain, Strawberry, Kinney Creek, and North Sand Hills) receive high use from motorized/mechanized use.

Administratively, the KFO has had to limit motorized use by area (by, for example, motor vehicle closures), limit motorized use by season (for example, imposing winter closures), increase signing, field staff, and visitor services, and add more rules and regulations. These measures have been needed to maintain natural resource settings, direct recreation use, provide for public safety and protect resources.

D. Recreation Management and Administration

Developed Recreation Facilities

The KFO contains relatively few developed recreation sites on BLM-administered public lands. Developed recreation sites occur along the Upper Colorado River SRMA and in the North Sand Hills SRMA. There are two fee campgrounds along the Colorado River at the Pumphouse and Radium Recreation Areas. Pumphouse has twelve developed campsites, one group campsite, three boat launches, two visitor informational kiosks, three double-vault toilet restrooms, and a potable water system. The Radium Recreation Area has six developed campsites, a group campsite, two visitor informational kiosks, two double-vault restrooms and a single vault restroom, a campground host site, and a public phone. In 2007, another attempt will be made to find potable water. If this happens, a water system will be installed with several water spigots in the campground. There will also be a campground host at the Radium Campsite supported by CDOW. There are several campsites along the river corridor that have picnic tables, fire rings, and primitive toilets. On the upper section of the SRMA, there are several river access points with seasonal toilets and parking. The North Sand Hills SRMA has two single-vault toilets and one double-vault toilet, and a visitor informational kiosk site. One of the single vault toilets is located on Colorado State Land Board land and is maintained by the BLM.

The KFO also has informal **target shooting ranges** on BLM-administered public lands near the communities of Kremmling and Walden. The Kremmling RMP did not provide management direction for developing and operating shooting ranges. Since the 1984 RMP was completed, target shooting has been a growing recreational activity near communities such as Kremmling and Walden. There has been an identified need to provide a safe location, away from residences and businesses, for this activity near both communities; however, the BLM does not have authority to operate or manage formal target ranges. A formal shooting range request from a proponent would be processed as a lands action by disposal or under the provisions of the R&PP Act.

Before the establishment of small informal ranges on the public lands near these two communities, target shooting primarily occurred on public lands at nearby scattered locations, resulting in disturbances to vegetation, soil, and wildlife and accumulations of such litter as broken bottles and shot-up cans. In 1998, an informal range was

established on BLM-administered public lands approximately three and a half miles east of Walden, at the intersection of County Road 12E and County Road 19. The range was developed and maintained in partnership with a local Boy Scout Troop, CDOW, and Jackson County. In 2000, another small informal range was established near Kremmling with the assistance of a local landowner, on BLM-administered public lands north of the county landfill and adjacent to County Road 224. In both instances these ranges were established at locations where target shooting was already taking place. The new sites addressed the need to provide safe locations for this activity, while reducing widespread disturbances to wildlife, soil, vegetation, and other natural and cultural resources. The Kremmling site has become a safety issue as the area immediately behind the range was designated as an OHV play area, in conjunction with the Wolford Travel Management Planning Decision in January of 2005. A new location is needed and preliminary work has begun to choose a new site that is still close to the community yet provides a safe and resource-sensitive location.

Target shooting is a growing sport. Rural residents expect to be able to shoot firearms on public lands and designating areas for this activity reduces or eliminates shooting around residential locations. A public range about 15 miles east of Kremmling and operated and maintained by CDOW is heavily used throughout much of the summer and fall. As the fall hunting season approaches and the use escalates, waiting lines are created at each target location on the range. Another range is on private land approximately 10 miles south of Kremmling and is operated and maintained by the Blue Valley Sportsman's Club; however, membership is required for use.

Target shooting will continue to grow in conjunction with residential growth and increased numbers of recreation users from the Front Range. Formally designated ranges can concentrate this use and associated disturbances in safe locations away from residences and businesses, where resource impacts can be mitigated. Ranges developed in the planning area, where, lead accumulation and disposal is a hazardous material issue, will require partners for development, operation, and maintenance. In some areas shooting ranges on public lands are developed through R&PP authorizations.

There are **five watchable wildlife sites** identified in the KFO. Sheep Mountain, 12 miles northwest of Walden, was identified as a raptor viewing site. Steep rock cliffs and outcrops with some cliff faces 200 feet high and the sagebrush grasslands and irrigated hay meadows at the base of the mountain provide good habitat for golden eagles, prairie falcons, and red-tailed hawks (Young et al. 2000).

The Hebron Waterfowl Management Area is 16 miles southwest of Walden. This 4,700-acre area consists of numerous small ponds and man-made lakes, varying in size from less than one acre to more than 160 surface acres. These bodies of water, Young et al. wrote (2000), "attract a variety of waterfowl, particularly during spring migration. Over 100 species of birds have been recorded here. Common water birds

include mallards, pintails, gadwalls, widgeons, Canada geese, willets, black-crowned night herons, phalaropes, avocets, and stilts. Good site for raptors such as golden eagles, prairie falcons, harriers, and Swainson's hawks. Pronghorn can be seen year-round, mule deer and elk mainly in winter."

The Trough Road, or County Road 1, which begins a mile south of Kremmling to State Bridge and follows the Upper Colorado River, is a prime wintertime viewing location for mule deer and elk. Bald eagles can be seen year-round but primarily in winter. Other raptors can also be seen in the open areas. Other bird species include "red-tailed hawks, golden eagles, turkey vultures, mountain bluebirds, red-naped sapsuckers, and tree and violet-green swallows are summer residents. Waterfowl along the river include Canada geese, mallards, and mergansers" (Young et al. 2000). There is a watchable wildlife pullout and interpretive panel two miles from the intersection of Highway 9 and Trough Road.

The Kremmling Pronghorn viewing site is a four-mile drive along County Road 22 just north of Kremmling. This is an excellent location to view pronghorn year-round.

The Windy Gap Wildlife Viewing Area is two miles west of Granby. This area "overlooks a small, scenic mountain reservoir surrounded by riparian habitat" (Young et al. 2000). The site is open May 1 through September 30 and offers visitors opportunities to view migrating waterfowl and water birds. Pronghorn sheep, mule deer, and an occasional elk or moose may also be seen. Information kiosks, interpretive panels, and viewing scopes are along an accessible trail. The BLM has an MOU with CDOW for the management of this area.

The demand for developed recreation sites is increasing as more people come to the planning area. The Kremmling Chamber of Commerce has had an increasing number of people ask where they can camp in a developed campsite in the Kremmling area. The Colorado River Scenic Byway was designated as a National Scenic Byway in 2005. As this resource gets more popular and driving for pleasure on nationally recognized road systems increases, the demand for developed recreation sites and interpretive information will grow as well. As the population of Grand, Summit, and Routt Counties continues to grow, and the National Scenic Byway gets developed, the demand for developed recreation sites will continue to grow as well.

Cooperative Management

As mentioned in Chapter 2, the BLM has a number of active partnerships that include the following:

- MOU with Kremmling Chamber of Commerce that establishes a cooperative relationship in hosting annual events on BLM-managed lands in and around the Kremmling area;

- MOU with North Park Chamber of Commerce to help educate the public and work together in managing the North Sand Hills SRMA and to aid in developing or improving trails and trail systems on BLM-managed lands; and
- MOU with Colorado Department of Wildlife Resources to cooperate in the management and maintenance of the Mugrage Campground and the Radium Recreation Area;
- MOU with Mountain Metal Mashers to monitor and maintain the Sidewinder technical 4x4 route in the Wolford Mountain TMA.

Additionally, the North Sand Hills Working Group is a partnership that was created in 2005 among the BLM, Jackson County, CDOW, Colorado State Parks, Colorado State FS, The Nature Conservancy, USFS, Colorado State Land Board and the Colorado Off-Highway Vehicle Coalition to strategize management goals and policy for the North Sand Hills SRMA.

Special Recreation Permits

As authorized by 43 CFR 2932, there are four types of uses for which SRPs are required: commercial use, competitive events, organized groups, and recreation use in special areas. The BLM can issue SRPs for noncommercial use in certain special areas, including rivers and backcountry and camping areas. Most SRPs issued by the KFO are related to river and upland hunting outfitting. Very few permanent camps/facilities are authorized on BLM-administered lands, as most camps are on private lands.

As of 2006, the KFO issued approximately 60 commercial river permits, which include guided fishing, white-water rafting, kayaking, kayak instruction, vehicle shuttles, equipment rentals, and photography. In 2001, the KFO published a moratorium on new SRPs for river-related commercial recreation activities in the Upper Colorado SRMA. At that time, there were 66 permits issued by the KFO. At that time, it was felt that the public demand for outfitter services was being adequately met. This limit on new commercial outfitting continues today.

The KFO currently issues nearly 30 upland permits. Upland permits include big game hunting, mountain lion hunting, horseback trail rides, jeep tours, camping, snowmobile tours, cattle drives, cross-country ski touring, hiking, mountain bike tours, and photography.

Competitive event permits include the national white-water championship also known as the Gore Fest, a multisport competition, a golf classic competition, a motorcycle trail race, and a running race. The Upper Colorado River special area issues recreation use permits for use of the Upper Colorado River facilities.

The number and type of SRPs issued and requested indicate the level of this type of use. There has been an increased demand for SRPs on BLM-administered public land within the KFO since the 1984 RMP. The BLM has maintained a waiting list for

additional river-related permits for the Upper Colorado River. Management along the Colorado River needs to be evaluated to determine if the current number of permits is adequate. The upland permits need to be evaluated to determine what is the appropriate number of permits. New activities may be permitted if the BLM determines that there is a public need for this type of commercial activity.

The KFO collects about $89,000 per year in SRP fees (averaged over the past six years). Fifteen percent of this revenue is expended in program administration, with the remainder spent on visitor services, monitoring, and maintenance.

Accessibility

Participation in outdoor recreation can be restricted by age, disabilities, health, lack of appropriate facilities within an accessible distance, undesirable recreation settings, lack of information about recreation opportunities, poor transportation, or lack of convenience.

The BLM improves facilities to make them more accessible to people with disabilities, as well as providing better general public land access and information about recreation opportunities. All construction is reviewed for compliance with Uniform Federal Accessibility Standards and the Americans with Disabilities Act Guidelines. As newer accessibility guidelines for outdoor developed areas, currently being developed, become final, the standards in this document will also be followed.

Interpretation/Education

No formal education or interpretation program exists. Education and interpretation on recreational opportunities and land stewardship is mostly done through brochures, signs, and the KFO Web site. The KFO staff participates in school programs, attends user groups/club meetings and local tourism boards, and contributes to club list servers. The KFO also interprets for and educate the public, while working with volunteers by promoting resource protection through programs such as Tread Lightly! and Stay the Trail.

Recreation Marketing and Tourism

Tourism drives most of the local economies in north-central Colorado. Transportation and access to the mountain communities is a key factor from a planning and tourism standpoint. I-70 is a vital transportation corridor linking the Denver International Airport, the Denver metropolitan area, and other Front Range population centers to the mountain communities.

The KFO is in Colorado's northwestern tourism region (Colorado Tourism Office 200x). Regional public land marketing has generally focused on skiing and resort towns, including Winter Park. Marketing also mentions the Colorado River, highlighting rafting, impressive canyons, and natural hot springs, such as those in Hot Sulphur Springs (Colorado Tourism Office 200?). BLM-administered public lands tend to be marketed indirectly or lumped in with other opportunities. Outdoor recreation currently provides significant positive economic contributions to the local

communities because hunters, snowmobile riders, and other recreationists tend to locally purchase: meals, food, fuel, sporting goods, gifts, and lodging. The KFO has not played an active role in marketing any outdoor recreation opportunity other than providing information to the Colorado State Office on recreation sites and their opportunities that are on a travel information Web site.

Recreation Monitoring

The KFO recreation staff and the KFO law enforcement officer monitor all forms of recreation activities and public use for user conflicts, recreation activity effects on natural and cultural resources, visitor health and safety issues, and conflicts with adjacent private landowners. In addition recreation staff monitors implementation of management actions and the attainment of management objectives. Trail counters have been implemented to obtain visitor numbers but have provided inaccurate numbers. Visitor counts and the type of recreation occurring through casual observations while in the field have been documented for areas in 2006 and will continue.

3.2.4 Comprehensive Trails and Travel Management

Travel and transportation are an integral part of virtually every activity that occurs on BLM-administered public lands: recreation, livestock and wildlife management, commodity resources management, ROW to private inholdings, Internet Web sites, and public lands management and monitoring in general.

This section addresses public travel and access. The Transportation Facilities Section addresses administrative access, commodity resources and products maintenance, and road maintenance.

Travel management is the integrated planning and providing for moving people to and through public lands. Management prescriptions (objectives) serve as the foundation for travel opportunities. A suitable travel management system provides clear specific direction on the appropriate levels of land and water access for all modes of travel. Visitors to public lands within the KFO use roads and trails for a variety of recreational opportunities, such as hiking, horseback riding, mountain bike riding, and OHV use. The modes of travel on public lands include automobiles, high clearance vehicles, four-wheel drive vehicles, all-terrain vehicles (ATVs), motorcycles, snowmobiles, mountain bikes, wheelchairs, horseback, and of course foot travel.

Nonmechanized Travel—Nonmechanized modes of travel include cross-country skiing, dog sledding, snowshoeing, horseback riding, pack animal driving, hiking, boating, hang-gliding, paragliding, and ballooning.

Mechanized Travel—Mechanized vehicles include, primarily, mountain bikes.

Motorized Travel—Motorized travel includes standard passenger vehicles on maintained roads and OHVs on primitive roads and trails. OHVs include off-road

motorcycles, ATVs, jeeps, specialized 4x4 trucks, and snowmobiles. It also includes motorboats on lakes, reservoirs, and the Colorado River.

The BLM designates areas within the lands it administers in the KFO as open, limited to existing roads and trails, limited to designated roads and trails, and closed to OHV use. The KFO has also designated three areas as temporarily closed in order to protect resources. A 265-acre area of the North Sand Hills SRMA was closed to motorized travel in 2003 due to resource damage. Sheep Mountain had a travel restriction put in place due to resource damage and concern for public safety. This travel restriction closed motorized travel to approximately 1,775 acres. A temporary road and area closure was implemented for the adjacent public lands to the Troublesome WSA. This closure was needed due to route proliferation and the need to protect resources and encompasses approximately 3,472 acres outside of the WSA boundary. Additionally, approximately one mile of a designated ATV trail within the Wolford Mountain Area has had a temporary closure due to a nesting area for eagles. This temporary closure is put in effect only during nesting season, and then the area is reopened for public use.

Approximately 85 percent of the planning area is designated as open to OHV use, 15 percent is limited to existing or designated roads and trails, or has additional restrictions such as closures (including temporarily closed) (Map 27–OHV Designations, **Appendix G**).

The designations are as follows:

- **Open—**Areas designated as open are available for OHV travel without restriction, based on an analysis that determines there are "no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-country travel";
- **Limited—**Areas designated as limited to either designated or existing roads and trails restrict OHV travel in order to protect resources. Restrictions may include the number or types of vehicles, time or season of use, use of existing roads and trails only, use of designated roads or trails, or licensed use only. The BLM may also impose other restrictions as necessary to protect resources;
- **Closed—**OHV travel is not allowed in areas designated as closed. Areas are closed in order to protect resources, ensure visitor safety, or reduce user conflicts; and
- **Temporary—**Areas may be closed to OHV use temporarily in order to allow resources to recover or for other purposes.

A. Current Level of Use

The primary factors describing the condition of travel management within the planning area are as follows:

- The lack of comprehensive travel management that considers the relationship between various resources, access for authorized permittees, and recreation uses;
- The lack of planning for recreational experiences that preceded the construction of historic routes;
- Unauthorized uses emanating from designated routes causing impacts on other resources;
- Subdivision of private property has created new access points to public lands;
- Users travel routes both as an end in itself and to get to specific places;
- Some routes and areas that are open to motorized use are only accessible to adjacent landowners; and
- Conflicts between recreational users.

The following section is broken out into three sections of use, motorized travel, mechanized travel, and nonmechanized travel.

Motorized Travel

OHV use is one of the fastest growing recreation uses in the planning area. OHV use has the potential to conflict with other recreation uses, such as hikers, bikers, and equestrian users, who use many of the same roads and trails. In addition, many recreation experiences require quiet and solitude, such as a backcountry experience or wildlife viewing.

In the current RMP, OHV designations were made solely to limit impacts—by protecting resources, preventing recreation conflicts, and protecting public safety. Recent travel management plans for specific areas have sought to proactively manage routes and route systems to provide specific recreation opportunities and experiences. However, this planning has focused on a relatively limited area. More than 80% of the KFO is currently open to OHV use. **Table 3-14** summarizes the areas within the KFO that have restrictions on OHV travel, and **Table 3-15** summarizes the roads within the KFO that have restrictions. (Note: the Federal Register Vol. 53, No. 189, dated September 29, 1988, with corrections adding Dice Hill in Vol. 55, No. 22, dated February, 1 1990, included the notice of Off-Road Vehicle Designation decisions, and implementation of Off-Road Vehicle Closures and Limitations was given.)

This Off-Road Vehicle Implementation Management Plan was written in September 1988. The areas and routes addressed within the plan had various levels of implementation done. Many areas had some signage and route barriers implemented, such as fencing, gates, and ditches. Areas addressed in the implementation plan have had minimal management with monitoring and maintenance done as funding and

Table 3-14
Travel Management Designations (Closed Areas)

Area	Limited (existing roads and trails)	Limited (designated roads and trails)	Closed
Troublesome WSA			8,158 acres
Platte River Contiguous WSA			33.5 acres
North Park *Phacelia formosula* ACEC/RNA			318 acres
Kremmling Cretaceous Ammonite ACEC/RNA			198 acres
Hebron Slough		2,840 acres	
Windy Gap		300 acres	
Sulphur Gulch		5,200 acres	
Wolford Mountain TMA		33,120 acres	
Dice Hill		5,800 acres	
Lawson Ridge	3,360 acres		
North Sand Hills	680 acres		
Total	4,040 acres	47,260 acres	8,707.5 acres

Table 3-15
Travel Management Seasonal Designations/Limitations

Type of Limitations	Area or Road
Vehicle Type Limitation	Inspiration Point Flats Jeep Trail
Seasonal Limitations	Resource Conservation/Wolford Mountain Area December 1 – April 30 restricted to snowmobiles on designated routes to protect big-game wintering habitat.
	Hebron Slough June 1 – August 1 closed to all motor vehicles to protect nesting waterfowl. August 1 – July 1 motorized vehicles are limited to designated roads and trails. Snowmobiles operating on snow are excepted from this winter seasonal limitation.
Seasonal and Year-Round Limitations	Inspiration Point Flats Road and Jeep Trail Closed December 1 – April 1
	Pumphouse Recreation Site Access Road Closed December 1 – April 1
	Dice Hill Road No. 2750 Closed April 15 – June 1

Table 3-15
Travel Management Seasonal Designations/Limitations *(continued)*

Type of Limitations	Area or Road
	Black Mountain Access Road No. 2757 Closed April 15 – June 1
	Grouse Mountain Road No. 2758 Closed April 1 – June 1
	Smith Mesa Road No. 2759 Closed April 15 – June 1
	Smith Mesa Lower Mainline Road No. 2762 Closed Labor Day – June 1
	Kinney Creek Road No. 2755 Closed April 15 – June 1
	McQueary Creek Road No. 2756 Closed Labor Day – June 1
	Kinney Creek Spur Road Closed Labor Day – June 1
	Sheriff Creek Road No. 2764 Closed all year
	Strawberry Road No. 2751 Closed April 15 – June 1
	Hurd Peak Road No. 2765 Closed April 15 – June 1
	Buffalo Peak Access Roads Nos. 2507 and 2508 Closed April 15 – June 1
	Independence Mountain Access Roads Nos. 2503 and 2504 Closed April 15 – June 1
	Parson's Draw Road No. 2513 Closed all year
	Three Mile Creek Road No. 2510 Closed October 1 – June 1 (snowmobiles excepted)
	Mitchell Placer Road No. 2511 Closed all year
	Bull Mountain Road No. 2505 Closed April 15 – June 1
	Owl Mountain Roads Nos. 2502 and 2506 Closed April 15 – June 1
	Owl Mountain Spur Roads Closed all year
	Radium Hot Springs Access Road Closed June 1 – Labor Day (Deferred Implementation)

Table 3-15
Travel Management Seasonal Designations/Limitations *(continued)*

Type of Limitations	Area or Road
Seasonal and Year-Around Limitations not listed in 1988 OHV Implementation Plan	Behler Creek Road No. 2769
	Spruce Creek Road No. 2767
	Spruce Creek Spur 1 No. 2770
	Spruce Creek Spur 2 No. 2771
	Wolford Mountain Single Track

staffing was available. Routes in these areas have proliferated as motorized recreation has increased in popularity. Seasonal and year-round limitations on roads have been managed to protect roads and areas from resource damage during times of wet and muddy conditions. Many roads that were addressed in the implementation plan are closed to OHV use when conditions become wet and muddy. Roads are usually closed by locked gates by the end of October as weather conditions exacerbate erosion. Some seasonal routes are not closed off by gates or other barriers since snow levels will effectively close these routes to all motorized vehicles except snowmobiles.

The areas with designated routes usually do not have trails that were built with recreation experiences in mind. Most routes either follow historic nonrecreation routes, such as those for grazing, mining, or administrative access, or they were created by OHV users. In either of these cases, the trails do not always provide desirable recreation experiences. Many of these routes are often unsustainable and cause resource damage. As of January 2007, there are approximately 3,250 miles of inventoried routes in the KFO, for an average density of 5.09 miles of routes per square mile of land.

As is the case throughout the West, OHV use has increased dramatically in the KFO since the current RMP was written. Open lands that once did not experience impacts because of light use now commonly have impacts on natural and cultural resources, as well as impacts on recreation.

The heaviest OHV use occurs in the Wolford Mountain, Strawberry, and North Sand Hills, with moderate to heavy OHV use in the Kinney Creek and Dice Hill areas, that is, most such use occurs during hunting seasons. This use occurs nearly year-long, and for many users the act of driving/riding is the primary reason for their recreation visit. Most of these visitors live within an hour's drive of the area (with the exception of North Sand Hills) and enjoy practicing their technical skills, using their equipment, and spending time with family and friends. During the autumn, most parts of the KFO experience a lot of OHV use from recreationists who are hunting. Much of this use is focused in the Dice Hill, Kinney Creek, Strawberry, Black Mountain, Smith Mesa, Independence and Owl Mountain areas. These tend to be destination areas, with visitors coming from all parts of Colorado and from around

the country. In coming to the KFO, they seek the benefits of public access for trophy game hunts.

In addition to heavier OHV use, the increased subdivisions on adjacent private lands (for example, Big Horn Sub-division and Legacy Park) have created additional nonmotorized use and new expectations for recreation experiences. Many of these users recreate on BLM lands because the lands are close to home and provide a convenient place to exercise, relieve stress, and spend an hour or two with family and friends. The new uses in these places vary from "backyard" hiking, mountain biking, and dog-walking to fly fishing. At times these uses and expectations conflict with the experiences desired by motorized users. Until recently, there has been very little demand for—and consequently very few resources allocated for—nonmotorized recreation travel.

OHV use has also been increasing on BLM-administered public lands surrounding municipalities. The towns of Kremmling, Granby, Hot Sulphur Springs, and Walden have all experienced this growth. In Kremmling, motorized use is the dominant use, but other uses are increasing, such as mountain biking. In Hot Sulphur Springs, mechanized and non motorized activities are the dominant use. In Walden, motorized use dominates. In Granby, there has been a mixture of motorized, non-motorized and mechanized use.

Mechanized Travel

Mountain biking use has increased on public lands within Grand County. No mountain bike-specific trails exist, but routes have been recognized by interest groups as popular rides. Some of these routes exist within the Wolford Mountain TMA but have had segments closed in the Wolford Mountain Travel Management Plan due to resource and trail network concerns. A popular mountain bike route exists within the Dice Hill area. Mountain bike use has increased within the Strawberry area as well, which is near many other county, state, and federal land areas that have seen increased visitation and dispersed use.

Nonmechanized Travel

A wide variety of nonmechanized dispersed recreation uses occur in the KFO, such as hiking, horseback riding, and snowshoeing.

Hiking opportunities in the planning area are limited by the lack of identifiable, designated, and signed trails. Only a few developed and maintained hiking trails exist in the KFO. These include the Gore Canyon Trail at Pumphouse heading into Gore Canyon, the Argentine Trail near the Radium Recreation Area accessing the warm springs along the Colorado River, and the Yarmony Trail along the Colorado River near State Bridge. Other hiking trail opportunities exist on Sheep Mountain in eastern Grand County but have limited access to the public. Other areas seeing heavy hiking use and user created trails are along the river corridors that access popular fisheries on public lands. These areas include Strawberry along the Fraser River, the

Sunset, Powers, and Reeder Creek fishing access sites along the Colorado River and the Blue River access site off of the Trough Road (County Road 1).

Horseback riding is a popular recreational activity that occurs throughout the KFO. Many private homeowners in both Middle and North Park own horses and use them as a source of recreation as well as transportation within ranch lands. Horseback riding is allowed throughout the KFO with little or no restrictions. Horses are also used for hunting, where recreational hunters use horses to access remote areas and to pack out game. Jacques Road along Highway 40 in Grand County was improved for horse trailers and includes a parking/staging area for large trailers. This parking area accesses a route that is open to nonmotorized travel, with the exception of snowmobiles, when conditions permit. Several dude ranches are permitted for horseback trail rides, and one is also permitted for cattle drives on public lands. Other outfitters are permitted to use horses for transportation and game retrieval. This use has brought many visitors to the planning area that are an economic benefit to the local communities and businesses.

The following paragraphs describe the current level of use in the higher use areas mentioned above, in addition to areas where issues are occurring.

Strawberry

The Strawberry area sees both motorized and nonmotorized use and has seen increased visitation as the local population and visitation from front-range communities increases. The Strawberry area is also close to the Winter Park resort, which continues to expand and see increased visitation as well. A series of single track routes named the "Phases" are in the Strawberry area and are used by motorized and nonmotorized bikes. These single track routes have proliferated in recent years and continue on to USFS lands adjacent to the east of the BLM. The USFS lands are designated nonmotorized with the exception of over the snow snowmobile use. This area also provides public access to the Fraser River, which is a popular fishing area due to the lack of public access along other sections of the river. During high runoff periods, the Fraser River has some kayak use, with visitors putting on the river just outside Tabernash. Other routes that are used within this area by OHV users are two-track roads that exist from timber harvesting. Dispersed hiking and camping also occurs, providing visitors with outstanding views of the Fraser Valley, Byers Peak, and the Continental Divide. Winter uses include snowmobiling, snowshoeing, cross-country skiing, and fishing. The Behler Creek Road No. 2769 off of Strawberry Road No. 2751 has been historically closed each year. This was implemented to keep motorized travel off the road during wet seasons and is usually closed early in October.

Troublesome WSA

Within the closed designation areas, the Troublesome WSA continues to have motorized intrusion from the bordering roads on the west and south sides of the WSA. A Temporary Road Closure was put in place for the adjacent BLM public lands on September 13, 2006, to protect health and public safety and excessive

erosion, prevent the unnecessary destruction of plant life and wildlife habitat, protect the environment, and preserve areas having cultural or historical value until management planning can be completed for the affected area. This temporary closure also acts as a deterrent to motorized travel intrusions into the WSA by limiting the motorized access to the area. This closure follows and includes lands within an Emergency Road and Area Closure implemented September 21, 2004, for BLM public lands in sections 21 and 26 of T4NR80W north of a ditch access route adjacent to the WSA. The emergency road closure was put in place due to new ATV trails with one transecting a wet meadow ecosystem.

Dice Hill

Of the Limited to Designated Roads and Trails designations, Dice Hill has seen a large increase in motorized use, mostly during the fall hunting season. With the 1988 ORV Implementation Plan, two informational signs were installed that identified BLM public lands as a Limited Use Area. Signage was used to mark roads and trails that were open to motorized travel. Due to funding and staffing constraints, minimal monitoring and maintenance has been done. New user routes have been created and signs have been vandalized or removed or are in poor condition. Additionally, some routes within the Dice Hill area were not addressed within the plan or documented in the plan map. These will have to be addressed with future travel management planning efforts.

Routes that were not identified in the plan currently are left open until they can be designated in future planning efforts. Routes not identified in the plan include access routes from private property on the western edge of the Dice Hill area, Spruce Creek Road No. 2767, Spruce Creek Spur 1 No. 2770, and Spruce Creek Spur 2 No.2771. The Spruce Creek Road and its spur roads are closed seasonally in October. Dice Hill Road No. 2750 gate is no longer closed seasonally due to new homes that were built in private in-holdings past the gate after the plan was implemented. In 2006, an effort was started to reimplement the signage of routes that were designated open or closed in the 1988 plan.

Wolford Mountain

Designated and signed motorized recreation opportunities to specific uses exist within the Wolford Mountain TMA that began implementation in 2005. This travel management plan designates all routes as closed or open with specified travel types. Foot and horse travel is unrestricted throughout the management area with the exception of the Kremmling Cretaceous Ammonite site ACEC, which is restricted to foot travel. The plan reduced the miles of OHV motorized routes from 231 to 167, eliminating cross-country motorized travel. A seasonal closure is in place between December 15 and April 15th to protect big game winter range and to prevent resource damage. During the winter closure, over the snow travel is limited to county roads, with the exception of one route linking County Road 25 to County Road 2. Additional seasonal travel restrictions are in place for the Wolford Mountain Motorcycle Trail and two routes within the southeastern section of the management area. While route designations have been implemented, route proliferation continues

and monitoring and implementation will need to be continued with an emphasis on visitor education. A unique OHV opportunity exists with the Sidewinder Extreme 4x4 Jeep Trail, just outside the town of Kremmling. This trail is a series of constructed obstacles that is for experienced technical drivers with specially modified equipment. This trail was featured in Petersen's 4Wheel and Off-Road magazine.

North Sand Hills

The North Sand Hills SRMA is limited to existing roads and trails, with motorized travel allowed in the open sand dunes. Of this area, 671 acres are within an Instant Study Area, one of three wilderness designations under the Wilderness Act of 1964.

As a result of all of these factors, there is a need for comprehensive travel management of all recreation uses and for close coordination with transportation planning for nonrecreational uses.

B. Characterization

Trends/Forecasts

Studies show annual OHV sales more than tripled between 1995 and 2003, to more than 1.1 million vehicles sold in 2003. ATVs continue to account for more than 70 percent of the OHV market. Sales and popularity of sport utility vehicles and other 4-wheel drive vehicles are increasing as well and are often modified to operate on extreme off-road conditions.

OHV use has increased throughout the KFO, and will continue to increase as Grand and Summit Counties continue to see increased population growth. Areas expected to see an increase in use include the Wolford Mountain, Strawberry, Dice Hill, North Sand Hills, Kinney Creek, Windy Gap, and Upper Colorado SRMA.

Areas having increased non-motorized use are mostly within river corridors, as anglers and other visitors hike along and to waterways. The Strawberry area is seeing an increase in use due to its proximity to the Winter Park Resort Community, which is growing rapidly. Uses include mountain-biking, fishing, hiking, hunting and camping.

It is expected that subdivision of private property adjacent to BLM land will continue. Continued collaboration between the BLM and municipalities/counties will help provide appropriate access during the subdivision design and valuable stewardship once the homes are occupied.

3.2.5 Forestry

A. Current Level of Use

The harvest level of 2.3 million board-feet was calculated in 1992 from about 35,800 acres of suitable commercial forest lands. Additional volume and biomass are available for harvest from noncommercial species and other commercial forest lands

that were considered unsuitable due to isolated location, access, and slope in the calculation. Access to isolated BLM parcels across private lands is becoming more common due to the mountain pine beetle epidemic and the heavy mortality.

The current allowable cut has averaged about 2.0 million board-feet per year during the past ten years. This is a combination of sawlogs, firewood, and posts and poles. The annual amount has varied from about 1.5 million board-feet to 2.5 million board-feet over the past five years. Additional forest products sold include transplants and Christmas trees. The sales of these products vary from 100 to 300 Christmas trees per year and from 50 to 200 transplants per year.

B. Characterization

Trends

The harvest levels over the past five years have been relatively stable averaging about 2 million board-feet of forest products per year. Market demand determines what types of forest products are sold each year. The post and pole market has been up and down over the past ten years. Firewood demand had decreased significantly over the past fifteen years due to burning limitations and relatively cheap electric and natural gas prices. With the recent increases in gasoline, natural gas, and fuel oil prices, there is a renewed interest in fuelwood and other products such as pellets and chips due to the ready availability of dead and dying timber. Sawlog demand has decreased over the past fifteen years as there are fewer sawmills in the Colorado and southern Wyoming to process the logs. Use of forest biomass has been developing within the state for the past several years. Practical applications include wood pellets for heating fuel, chips for landscaping and heating fuel, shavings for animal bedding, and cellulosic biofuels. Private landowners are growing more concerned about the possibility of large-scale fires and are doing more harvesting of dead and dying trees. They are becoming more interested in cooperating on joint harvesting operations on nearby or adjacent public lands.

Forecasts

The regional demand for sawlogs should remain relatively stable but depends on national housing construction levels, which are currently declining due to higher interest rates. The merchantability for sawlog products for the lodgepole pine affected by mountain pine beetle will continue to decline as the dead trees crack and begin to rot at the stump. The development of other markets for the dead trees is critical to our ability to continue to harvest trees to regenerate the forest. Various types of biomass use are needed in the local areas so that transportation and handling costs remain reasonable and economical. These can include pellet plants, biomass cogeneration of electricity, burning of biomass for heat and steam for industrial facilities, and small-scale biomass heating plants for schools and residential use. An accelerated harvest program for five to ten years is needed to salvage the dead and dying lodgepole pine trees before their merchantability is lost; to regenerate the areas to young, vigorous stands; to reduce the current and future fire hazard; and to take

full advantage of the capability of the lands to support commercial forests for a sustainable stream of forest products and other values.

3.2.6 Lands and Realty

A. Current Level of Use

The goals of the lands and realty program are to manage the public lands to support the goals and objectives of other resource programs, to provide for uses of public lands in accordance with regulations and compatibility with other resources, and to improve management of the public lands through land tenure adjustments. The lands and realty program is a support program to all other resources to help ensure that BLM-administered lands are managed to benefit the public (**Table 3-16**).

Major focus areas for the lands and realty program include land tenure adjustments, ROWs, and communication sites.

Table 3-16
Surface Land Ownership in the KFO

Land Status	Acres
BLM	378,494.34
Private	839,316.78
State of Colorado (DOW, State, and State Forest)	188,208.36
Other federal (National Park, National Wildlife Refuge, National Recreation Area, and USFS)	1,709,524.53
Total:	3,115,544.01

Land Tenure Adjustments

BLM land tenure adjustments are used to consolidate, where possible, BLM-administered surface and subsurface estates. The actions described below are considered.

Disposal Recreation and Public Purpose Act: Public lands have the potential for disposal when they are isolated or difficult to manage. Disposal actions are usually in response to public request, such as community expansion. Disposals result in a title transfer, wherein the lands leave the public domain. All disposal actions are coordinated with adjoining landowners, local governments, and current land users.

Sale: Public land sales are managed under the disposal criteria set forth in Section 203 of FLPMA. Public lands determined suitable for sale are offered on the initiative of the BLM. The lands are not sold at less than fair market value. Land suitable for sale must be identified in the RMP. Any lands to be disposed of by sale that are not identified in the current RMP require a plan amendment before a sale can occur.

Acquisition: Acquisition of lands can be pursued to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, Land and Water Conservation Fund purchases, or donations or receipts from the Federal Land Transaction Facilitations Act sale or exchanges. Only inholdings within the boundary of federally designated areas or adjacent to public lands with a federal special designation may use funds from the act..

Exchange: Land exchanges are initiated in direct response to public demand, or by the BLM to improve management of the public lands. Lands need to be formally determined as suitable for exchange. In addition, lands considered for acquisition would be those that meet specific land management goals identified in the RMP. Nonfederal lands are considered for acquisition through exchange of suitable public land, on a case-by-case basis, where the exchange is in the public interest and where acquisition of the nonfederal lands will contain higher resource or public values than the public lands being exchanged.

Withdrawal: Withdrawals are used to preserve sensitive environmental values, to protect major federal investments in facilities, to support national security, and to provide for public health and safety. Withdrawal segregates a portion of public lands and suspends certain operations of the public lands laws, such as mining claims. Federal policy now restricts all withdrawals to the minimum time and acreage required to serve the public interest, to maximize the use of withdrawn lands consistent with their primary purpose, and to eliminate all withdrawals that are no longer needed.

In all land tenure adjustments, keeping the surface and mineral estate intact on both the lands disposed of and acquired would benefit the future owners and their use of the land.

Rights-of-Way

Western Utility Corridor Study established an energy corridor north of Walden. No other corridors have been established to accommodate preferred routes for transportation and transmission facilities at this time. There is a Programmatic EIS being written for the West-Wide Energy Corridors. The proposal includes a corridor south of Kremmling coming from the east following the Western Area Power transmission line route as it heads north along US Highway 40 then over Colorado Highway 134 (Gore Pass). Identification of corridors may not necessarily mandate that transportation and transmission facilities would be located there if they are not compatible with other resources uses, values, and objectives in and near the corridors or if the corridors are saturated.

ROWs across BLM-administered land within the KFO are primarily for pipelines, roads, and electrical and telephone lines. The KFO processes approximately 25 ROW applications per year. To the extent possible, linear ROWs, such as roads and pipelines, are routed where impacts would be least disturbing to environmental resources, taking into account point of origin, point of destination, and purpose and

need of the project. ROWs are issued with surface reclamation stipulations and other mitigation measures. Restrictions and mitigation measures may be modified on a case-by-case basis, depending on impacts on resources. Map 28–Utility Corridors (**Appendix G**), shows the utility corridors within the KFO.

Communication Sites

Several sites within the KFO host communication equipment for various public and private tenants, such as phone companies, local utilities, and local, state, and federal agencies. There are no designated sites for the establishment of communication sites in the KFO. **Table 3-17** lists the communication sites authorized by the KFO.

Table 3-17
Communication Sites within the KFO

Serial Number	Holder/ Owner	Town, Range, Section	Tenant/ Customer	Type Facility	Expiration Date
COC-011390	Colorado Division of Telecom	1N-78W-5		Parshall Divide police base radio station	1/1/9999
COC-028183	Union Pacific Railroad	2N-78W-19,30 2N-79W-25	Customer-Sprint Private Mobile Radio Service	Grouse Mountain microwave station and repeater site	2/3/2010
COC-12528	CenturyTel of Eagle	7N-79W-12,13		Owl Ridge microwave repeater	6/19/2022
COC-24732	BLM	10N-80W-6 11N-80W-31 11N-81W-24,25	Customer-US Fish and Wildlife Service	Independence Mountain repeater	1/1/9999
COC-28200	Jackson County	8N-80w-17,18	Customer-Colorado connection repeaters (Andrews) Tenant – Page 1 of Wyoming Commercial Mobile Radio Service	Peterson Ridge-Highway 14	9/17/2011
COC-48523	Northern Colorado Water	1N-77W-3		Mount Chauncey microwave repeater	11/14/2018

Table 3-17
Communication Sites within the KFO *(continued)*

Serial Number	Holder/ Owner	Town, Range, Section	Tenant/ Customer	Type Facility	Expiration Date
COC-50030	Andrews Radio Service	1N-77W-3	Customer-Mountain Parks – Private Mobile Radio Service Grand County	Mount Chauncey Commercial Mobile Radio Service	2/28/2011
COC-52074	BLM Craig District	2S-83W-13		Yarmony repeater	1/1/9999
COC-53312	QWEST Communications	11N-76W-4		Bull Mountain electronic communication site microwave	1/26/2012
COC-55891	Union Telephone	1N-81W-35		San Toy Cellular building and antenna	2/26/2020
COC-55898	Steamboat Springs Amateur Radio	1N-81W-35		San Toy building and antenna	10/11/2020
COC-58276	Union Telephone	11N-79W		Sentinel Mountain Cellular	8/28/2020
COC-58544	Grand County Amateur Radio	1N-77W-3	Customer of Andrews C-50030	Mount Chauncey Private Mobile Radio Service	9/14/2015
COC-60672	Andrews Radio Service	1N-77W-10	Customer-Grand City	North Cottonwood FAM	9/15/2027
COC-61882	Tri-State Generation and Transmission Association	1N-77W-10	(Mountain Parks) Private Mobile Radio Service	North Cottonwood microwave	9/20/2028
COC-65413	Union Pacific Railroad	1N-81W-33		San Toy Microwave	3/11/33
COC-67115	Verizon Wireless	1N-77W-10		North Cottonwood Cellular	10/22/2033
COC-67285	Verizon Wireless	1N-78W-3		Mt. Bross Cellular	6/1/2034

Table 3-17
Communication Sites within the KFO *(continued)*

Serial Number	Holder/ Owner	Town, Range, Section	Tenant/ Customer	Type Facility	Expiration Date
COC-68772	Larimer County	11N-76W-4	(Bull Mountain) Private Mobile Radio Service		1/1/9999
COD-051744A	Western Area Power Administration	1N-80W-33		Kremmling	1/1/9999

B. Characterization

Trends

All 398,275 acres of BLM-administered public lands in the KFO were available for disposal as Category I or Category II lands. The KFO has exchanged 61,240 acres since the RMP was approved in 1984.

Category II lands were the remaining 14,000 acres that were identified for disposal under the criteria for disposal for Category I lands. Since implementation of the plan, the KFO has sold 450 acres, has issued patents for 80 acres through R&PPs, has exchanged 1,612 acres of Special Exception (State Indemnity Selection Parcels), exchanged 343 acres of Special Exception (such as Exchange parcels), and 611 acres of Special Exception (CDOW parcels).

In 2000, the BLM signed an amendment to the RMP establishing land use priorities for specific parcels of land acquired by the KFO since the RMP was completed in 1984. The BLM has acquired 36,389 acres in exchanges since 1984.

Opportunities were provided for use of public lands to develop facilities that benefited the public, while considering environmental and agency concerns through R&PP leases, ROW grants, leases, and permit authorizations. Use authorizations were monitored and checked for compliance, in accordance with BLM methods and procedures.

Forecast

The BLM is moving toward the consolidation BLM-administered public lands to benefit the public. To achieve this goal, candidates for land tenure adjustment through disposal, sale, exchange, or acquisition include parcels that are difficult to manage or that do not have public access, relatively small parcels adjacent to other federal- or state-managed lands, parcels that would increase conservation of natural resources, and parcels that increase access and use of public lands.

All 378,494 acres of public lands in the KFO are available for disposal as Category I or Category II lands.

Category I lands are the existing land base of 378,494 acres to be managed by the BLM under multiple use concepts and will not be considered for disposal by sale under Section 203 of FLPMA. However, this existing land base is available for disposal, on a case-by-case basis, through boundary adjustment, state indemnity, or other statutory authority, if disposal serves the national interest. Land exchanges would be considered in these areas if the exchange would result in a consolidated land ownership pattern or improved manageability of natural resources or would otherwise be in the public interest consistent with the provisions of Section 206 of FLPMA. R&PP leases and patents and Section 302 leases will also be considered. Acquisition would be made in areas placed in this category if these same criteria are met. Refer to Appendix 12, Ownership Consolidation-Land Tenure Map of the Final RMP/EIS for Category I lands specifically identified as State Indemnity Selection Parcels.

Category II lands are the remaining 13,500 acres that are identified for disposal under the criteria for disposal for Category I lands. However, Category II lands may also be considered for disposal by sale under the provisions of Section 203 of FLPMA. Refer to Appendix 12, Ownership Consolidation-Land Tenure Map of the Final RMP/EIS for Category II lands identified for disposal. Disposals would require site-specific EAs.

ROW applications across BLM-administered lands have increased in the KFO. The demand for utility corridors, access to communication sites, and additional roads within the RMP planning area will likely continue to increase. Established ROW corridors should be evaluated and considered for adjustment or elimination. The US Department of Energy is identifying additional corridors for energy-related ROWs. The US Department of Energy has potentially identified a corridor in southern Grand County. The potential for additional ROW corridors should also be considered.

Demand for communication site applications, on both existing and new sites, on BLM-administered public lands with the KFO is also increasing. Communication site applications are now granted through leases rather than ROWs. The KFO expects the increasing demand from communication sites to continue. The revised RMP should include a focus on inventory and planning for communication site identification and management.

Key Features

A West-Wide Energy Corridor Programmatic EIS is being prepared for new energy corridors. The new corridor within the KFO is south of Kremmling, then heads north over the Gore Pass, and includes a large transmission line. There is potential for other energy facilities to be placed in the same corridor.

There are collocation communication sites in the KFO on North Cottonwood, Mt. Chauncey, San Toy, Wolford Mountain, Peterson Ridge, and Owl Ridge. Collocation will continue to be encouraged.

3.2.7 Transportation Facilities and Access

A. Current Level of Use

Federal, State, and County Roads

A network of federal, state, and county roads provides access throughout the KFO. US Highway 40 and Highways 9, 125, and 14 bring traffic to the region from throughout the US. Due to the geography of the planning area and location of mountain communities, these routes are major thoroughfares that have moderate to high use throughout the year within the management area (Map 29–Transportation Routes, **Appendix G**). US Highway 40 travels through Grand County and Jackson County from Berthoud Pass near Winter Park, to Muddy Pass and Rabbit Ears Pass near Steamboat Springs, passing through the towns of Winter Park, Tabernash, Granby, Hot Sulphur Springs, Parshall, and Kremmling. Highway 9 connects off of I-70 in Summit County and extends into Kremmling, then connects with US Highway 40. Highway 125 connects from I-80 in Wyoming and passes through Jackson and Grand Counties, connecting with US Highway 40 near Granby, passing through the towns of Walden and Rand. Highway 14 passes through the management area from the Poudre River Canyon to the east, then connecting to US Highway 40 to the west. Highway 14 passes through the towns of Gould, Walden, and Coalmont.

Each county throughout the planning area has many county roads passing through BLM lands that provide access to many areas not accessed by federal or state road systems. Private land owners, utility companies, recreationists, and permittees alike use these routes for access to other primitive roads and trails and cross-country travel on public lands.

BLM Roads

BLM roads provide public and administrative (agency and permittee) access to public lands through public lands and to in-holdings of private land within the KFO. Reasonable administrative access is made available to persons engaged in valid uses, such as mining claims, mineral leases, livestock grazing, recreation, and other uses. Most use of BLM roads would be described as casual, with the exception of those that private business and local governments operate on and along while working within oilfields, gravel pits, and other mineral claims.

The KFO has XX roads encompassing XX miles designated as numbered roads that are maintained by the BLM. Other roads throughout the field office are maintained by the Colorado Department of Transportation, county road departments, utility companies, and private entities.

Related to transportation planning is travel management, which is the identification, through RMP planning, of areas where foot, pack stock, mechanized, and motorized vehicle travel is appropriate, restricted, or not allowed depending on resource objectives and use considerations (see the Comprehensive Trails and Travel Management Section).

Functional road classification types for BLM system roads—Appendix F contains a list of the BLM KFO system roads and the maintenance level. Map 30–Maintained Roads (**Appendix G**) displays the locations of maintained roads.

Collector Roads (Level 4 or 5). These BLM roads normally provide primary access to large blocks of land and connect with or are extensions of a public road system. They accommodate mixed traffic and serve many uses. They generally receive the highest volume of traffic of all roads in the BLM road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the BLM.

Local Roads (Level 4 or 3). These BLM roads normally serve a smaller area than collectors and connect to collectors or public road systems. Local roads receive lower volumes, carry fewer traffic types, and generally serve fewer users. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrain, where operating speed is reduced by effort of terrain, may be single-lane roads with turnouts. Environmental impacts are reduced as steeper grades, sharper curves, and lower design speeds than are permissible on collector roads are allowable.

Resource Roads (Level 2). These BLM roads are spur roads that provide point access and connect to local or collector roads. They carry very low volume and accommodate only one or two types of use. Restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental compatibility and minimizing BLM costs with minimal consideration for user cost, comfort, or travel time.

Road System Maintenance

Road system maintenance has focused on maintaining major access roads, which generally receive most of the recreation traffic. The BLM engineering field office annually maintains about XX miles of road within the KFO, depending on road conditions and funding availability. Maintenance alternates between Middle Park and North Park each year, with road maintenance rotating through each location.

Agreements with Jackson County have provided maintenance for the two main access roads within the North Sand Hills. These roads were identified as BLM roads No. XX and have been specified as Jackson County Roads 6N and 6S. Additional contract work is done with Grand County, which maintains the Pumphouse Recreation Area access road. Approximately XX miles are planned for Fiscal Year

2007. Road maintenance consists of surface dragging, blading, grading, and applying magnesium chloride in some areas, usually in the summer or fall. Magnesium chloride is a salt compound, with added corrosion inhibitors, used to prevent or remove the build up of ice and snow on roads. Magnesium chloride is used on dirt and gravel roads as a dust prohibitor and road base stabilizer during the spring time. Additional corrective maintenance or water drainage work (installation of culverts, drains, or other water management devices) is preformed as needed, such as after heavy rainfall.

Road maintenance is limited at both the agency and county levels due to limited funding and must be prioritized depending on the season or placed on a rotational basis. Snow removal is not performed by the BLM, but some access routes have portions of them plowed by county road maintenance, utility companies, or private entities if they provide access to utilities, homes, or private buildings. Examples are Strawberry Road, Kinney Creek, Dice Hill, Pumphouse Recreation Area, and the Western Area Power Administration substation west of US Highway 40 and Wolford Mountain Reservoir.

Policies and Issues Relative to Revised Statute 2477

Section 8 of the Revised Statutes 2477, Rights-of-Way Settlement Act, of July 26, 1866, states that "the right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted." This congressional grant was later codified as Revised Statute 2477 (43 USC 932). The law was enacted to facilitate the settlement of the western US by the granting of ROWs for the construction of highways across unreserved public lands. The law was repealed in 1976 with the passage of FLPMA, which did not terminate valid ROWs established under Revised Statute 2477 before its repeal. The existence and extent of valid ROWs previously established pursuant to Revised Statute 2477 remains an issue because many of these ROWs have not been adjudicated/legally determined (BLM year?).

Between 1976 and 1992 there were XX cases and XX miles of roads recognized, serialized, and noted to the master title plats within the KFO.

3.2.8 Renewable Energy

A. Current Level of Use

According to the Energy Policy Act of 2005, if there is potential for wind energy generation with a capacity of at least 10,000 megawatts of electricity, the BLM should approve these nonrenewable energy projects within 10 years. No applications have been received for wind energy test sites in the KFO, nor have any applications for solar facilities been received. There has also been no interest in solar power energy within the KFO. Biomass interest has increased within the KFO due to the large amount of beetle kill.

According to the Energy Policy Act of 2005, the BLM is to facilitate environmentally responsible commercial development of solar energy projects on public lands and to

use solar energy systems on BLM facilities where feasible. ROW applications for solar energy development projects will be identified as a high priority field office workload and will be processed in a timely manner.

According to USC 15855 (Grants to Improve the Commercial Value of Forest Biomass for Electric Energy, Useful Heat, Transportation Fuels, and Other Commercial Purposes), the Secretary concerned may make grants to any person in a preferred community that owns or operates a facility that uses biomass as a raw material to produce electric energy, sensible heat, or transportation fuels to offset the costs incurred to purchase biomass for use by such facility.

B. Characterization

Trends

Applications for a ROW grant may be submitted for one of the following types of wind energy projects:

- A site-specific wind energy site testing and monitoring ROW grant for individual meteorological towers and instrumentation facilities with a term that is limited to three years;
- A wind energy site testing and monitoring ROW grant for a larger site testing and monitoring project area, with a term of three years that may be renewed, consistent with 43 CFR 2807.22 and the provisions of this IM beyond the initial three-year term; and
- A long-term commercial wind energy development ROW grant with a term that is not limited by the regulations, but usually in the range of 30 to 35 years.

Map 31–Wind Energy Potential (**Appendix G**), shows the potential for wind energy within the Kremmling Planning Unit. There is little potential for wind energy except in the Larimer River Valley. There has been interest in Grand, Summit, and Jackson Counties regarding biomass, due in large part to the mountain pine beetle infestations throughout the forests.

Forecast

The demand for alternative energy-related ROWs should increase nationally, but within the KFO the potential for wind and solar energy is low. However, the demand for biomass is expected to increase within the KFO. An application for a pellet plant was approved by the Kremmling Town Board in June 2007. Due to the large amount of biomass, it is expected that future applications and industry development will occur.

3.3 SPECIAL DESIGNATIONS – CURRENT CONDITIONS AND CHARACTERIZATION

3.3.1 Areas of Critical Environmental Concern

An ACEC is defined in FLPMA, Public Law 94-579, Section 103(a) as an area within the 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 safety from natural hazards. The BLM prepared regulations for implementing the ACEC provisions of FLPMA. These regulations are found at 43 CFR 1610.7-2(b).

Current ACECs will be reevaluated as part of the RMP revision process, which will determine whether the relevant and important values of each ACEC are still present and require continued management attention, whether or not threats of irreparable damage to these values have been identified, and whether or not current management is sufficient to protect these values. Goals, standards, and objectives for each area will be identified, as well as general management practices and uses, including necessary constraints and mitigation measures (see BLM Manual 1613).

A. Current Level of Use

There are two ACECs within the KFO totaling 460 acres (Map 32–Special Management Area Designations, **Appendix G**). The size of each area and the values it is designed to protect are listed in **Table 3-18**. The values for which these two ACECs were designated are still present and require continued management.

For the Kremmling Cretaceous Ammonite ACEC/RNA, visitor use can only be partially documented. Visitor use counts were informally started in 1989, with a more formal tracking system initiated in 1995. Informal tracking from 1989 to 1994 indicated that visitors to the site averaged approximately 50 per year. Use was primarily escorted visits from local high school and middle school geology classes with supervision provided by the KFO archaeologist and teachers.

In 1995, there were 78 visitors who requested information about accessing the site. In 1996, there were 38 visitors who requested information. Requests were primarily made in person, although requests were also honored through the mail and by phone. Of the total of known visitors for 1995 and 1996 (116 visitors), 70 (60%) were students accompanied by a teacher/professor. The remainder would be considered general public visitors with an avocational interest in geology and paleontology. All visitors to the site must go to some degree of effort to seek out and find this rather remote location.

It is noted that while visitor use has shown only a very modest increase, there has been a change in the types of visitors. In the years 1989 through 1994, visitor use was primarily from local grade schools. Beginning in 1995, visitors were primarily university students and avocational recreationalists. Locals and others who know that ACEC location do not request access information, and it is unknown how many of these visitors use the site yearly.

The inclusion of the ACEC in two book publications has stimulated much of the recent interest from the avocational community (Voynick, 1994 and Skwara, 1990).

The KFO archaeologist worked closely with both authors, and to their credit, they did not provide explicit directions to the site. Rather, they are referred to the KFO to obtain information and directions. As a result, the majority of avocational visitors to the ACEC are required to contact the KFO office to obtain maps and other information. This provides an opportunity to discuss the protected status of the site, track visitor use and provide some cautions regarding safety.

In addition, the ACEC has been published in professional journals and avocational newsletters (Kennedy et al, 1996 and Young, 1996, Johnson 1999, Cobban et al, 1992), etc.

Interest in fossils and paleontology has been greatly stimulated in recent years due in part to the popularity of dinosaurs, as evidenced by numerous recent movies, articles, books, museum exhibits and paleontology certification courses. Increasing interest has brought new avocational and professional visitors to the field to visit known fossil locations, and increased exploration to discover new fossil localities. This has in turn increased agency concern for potential impacts on the resource from vandalism and theft. Increased interest has also brought about an increase in the availability and monetary value of fossils for sale by the commercial sector. Many of the fossil specimens are obtained legally from out-of-country and private land sources, but many specimens are collected illegally from public lands for their commercial value. This is a concern at the ACEC because many of the fossil ammonites and baculites are located at or near the surface, and can be collected with relative ease. Additionally, the site is remote and only occasionally patrolled, increasing the vulnerability of the site to illegal activities. Renewed interest also has a positive effect in that it provides stimulus for paleontology students to pursue their interests into fossil domains such as the late Cretaceous Period.

For the North Park Phacelia ACEC, visitor use is minimal as there are no roads or trails that access the site.

Table 3-18
KFO ACECs

ACEC	Acres	Values
Kremmling Cretaceous Ammonite ACEC/RNA	160	Significant marine invertebrate fossils
North Park Phacelia ACEC/RNA	300	Endangered plant species

B. Characterization

Restrictions that arise from an ACEC designation are determined at the time the designation is made, and are designed to protect and preserve the values or serve the purposes for which the designation was made. In addition, ACECs are protected by

the provisions of 43 CFR 3809.1-4(b)(3), which requires an approved plan of operations for activities (except casual use) under the mining laws. The EIS for the revised RMP will identify a reasonable range of alternatives that will include current management for these areas.

For the Kremmling Cretaceous Ammonite ACEC/RNA, as visitor use increases on a year by year basis, it will become necessary to provide additional protection for the ACEC.

Increased protection could range from the extremes of maintaining an on-site BLM presence during the primary use period (Memorial Day to Labor Day) to shutting down the site to public access through road closures, and other administrative and physical measures. It is believed that visitor use would have to increase into the thousands before BLM could justify and be willing to pay for an on-site seasonally hired person. Likewise, closing of roads and disallowing access would be extremely unpopular with the public, would meet political resistance and hostility, and would not be consistent with BLM public land policies.

The encouragement of professional research and support of an on-site professional could provide some short term and intermittent protection. It is likely, however, that this would prove insufficient to meeting long term protection. Education of the public would appear to be the only viable, long term alternative for protection of the ACEC. This is an involved and time consuming endeavor. However, by continuance and enhancement of public outreach education programs, providing of brochures and interpretive signs, monitoring the use and type of visitors to the ACEC, and by continuing to request visitors to visit or contact the BLM office prior to their visit, the BLM hopes to provide short and long term protection of the site while allowing the public to recreate and enjoy the site and it's resources.

For the North Park Phacelia ACEC, outside disturbances and pressures will continue to be minimal.

3.3.2 Wilderness Study Areas

WSAs contain wilderness characteristics and are managed to preserve those values until Congress either designates them as wilderness or releases them for other uses. This applies to the three WSAs in the KFO, Troublesome, Platte River Contiguous, and North Sand Hills Instant Study Area (Map 33–Wilderness Study Areas, **Appendix G**).

In 1964, Congress passed the Wilderness Act, thereby establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for, and designated as, wilderness was managed by the NPS and USFS. With the passage of FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend which public lands under its administration should be designated wilderness. In 1991, the BLM issued a ROD that included wilderness

recommendations for WSAs throughout Colorado. Through this process, the Troublesome WSA and North Sand Hills Instant Study Area were recommended as not suitable and the Platte River Contiguous WSA as suitable. [Note: The North Sand Hills Instant Study Area had been recommended not suitable in a number of previous packages but had not received action by Congress. Thus, all of Colorado's five Instant Study Areas, including North Sand Hills, were included in the 1991 recommendation.]

A. Current Level of Use

There are no congressionally designated wilderness areas within the KFO. In 1991, BLM Colorado completed wilderness recommendations for 54 WSAs in the state. These recommendations were developed from the findings of a 15-year wilderness study process. The wilderness studies considered each area's resource values, present and projected future uses of the areas, public input, the manageability of the areas as wilderness, the environmental consequences of designating or not designating the areas as wilderness, and mineral surveys. Based on this review in the KFO, two WSAs were recommended for non-wilderness and one WSA was recommended for wilderness (**Table 3-19**). However, these areas have been managed under the interim management policies for WSAs (H-8550-1) until Congress acts on the recommendations. A discussion of the current resource values and uses found in each WSA, identified in 1991, under the authority of Section 603 (c) of FLPMA, can be found in the 1991 Colorado BLM Wilderness Study Report.

Table 3-19
Wilderness Study Areas in the Kremmling Field Office

Proposal Name	Acres Recommended for Wilderness	Acres Recommended for Non-Wilderness
Troublesome		8,250
Platte River Contiguous	30	
North Sand Hills Natural Area Instant Study Area		791

These three WSAs, established under the authority of Section 603(c) and 202 of FLPMA, are being managed to preserve their wilderness values according to the Interim Management Policy and will continue to be managed in that manner until Congress either designates them as wilderness or releases them for other uses. Activities that would impair wilderness suitability are prohibited in WSAs. There are six primary provisions of FLPMA with regard to interim management of WSAs:

- WSAs must be managed so as not to impair their suitability for preservation as wilderness;
- Activities that are permitted in WSAs must be temporary and create no new surface disturbance nor involve permanent placement of structures;

- Grazing, mining, and mineral leasing uses that existed on October 21, 1976, may continue in the same manner and degree as on that date, even if this would impair wilderness suitability of the WSAs;
- WSAs may not be closed to appropriation under the mining laws to preserve their wilderness character;
- Valid existing rights must be recognized; and
- WSAs must be managed to prevent unnecessary or undue degradation.

Only Congress can designate the WSAs established under Section 603 of FLPMA as wilderness or release them for other uses. The status of the existing WSAs will not change as a result of the KFO resource management planning process and revision of the RMP. A discussion of the current resource values and uses in the Troublesome and Platte River Contiguous WSAs can be found in the Colorado BLM Wilderness Study Report, Volume One, Craig District Study Areas. A discussion of the resource values and uses in the North Sand Hills Instant Study Area can be found in an EA Record that was completed in 1977. However, since this EA is over 30 years old, a brief description of the Instant Study Area is included below.

Should any of these WSAs be released from wilderness consideration by Congress and subsequently released from management under the Interim Management Policy, subsequent planning documents will prescribe how these lands will be managed. The following is a brief description of each WSA.

Troublesome WSA

The Troublesome WSA is about 18 miles north of Kremmling in Grand County, Colorado.

Natural Values:

- Primary vegetation is lodgepole pine, spruce, fir and aspen;
- Two major perennial streams, Rabbit Ears and Troublesome;
- Rugged topography varying from 8,000 to 10,800 feet;
- Riparian wetlands associated with streams;
- Remote, with limited public access;
- High quality deer, bear, moose, and elk habitat;
- No significant man-made impacts;
- Adjoins an 80,000-acre Colorado Wilderness Proposal area on USFS lands; and
- Part of one of the largest, nonwilderness roadless areas remaining in Colorado.

Current Uses:

- Recreational uses include hunting, fishing, hiking, backpacking, and wildlife viewing;
- Estimated use is 600 visitors per year;
- Portions of two grazing allotments are within the WSA; and
- Three big game outfitter/guides are permitted within the WSA.

Valid Existing Rights:

- Two grazing allotments, #7588 and #7565;
- Total AUMs 566;
- Range improvements consist of two stock ponds and a half mile of fence;
- Irrigation ditch on west boundary diverting water from Rabbit Ears Creek;
- 625-acre parcel of private land within WSA;
- Cherry-stemmed access road into private parcel;
- Private access road from west into Rabbit Ears Creek for grazing management;
- No oil and gas leases; and
- Water rights on Rabbit Ears Creek and Troublesome Creek below Matheson Reservoir.

Current Management:

- Current WSA;
- OHV status closed;
- Livestock grazing management on two allotments;
- Three SRPs issued for commercial hunting; and
- Monitored annually. In 2007, monthly monitoring will take place during the summer and fall when motorized use adjacent to the WSA is the greatest.

Platte River Contiguous WSA

The Platte River Contiguous WSA is about 18 miles north of Walden in Jackson County.

Natural Values:

- Area consists of a steep rocky hillside covered with Douglas-fir, pinyon pine, juniper and sagebrush;
- 30 acres adjoins southern end of the USFS Platte River Wilderness;
- Provides scenic overview of North Platte River;
- Protects portion of Platte River viewshed; and

- Provides habitat for deer and elk.

Current Uses:

- Minimal recreation use occurs and limited hunting;
- No public access other than hiking up from the North Platte river;
- Part of existing grazing allotment; minimal grazing due to steep rocky terrain;
- No commercial outfitters; and
- No oil and gas or ROWs.

Valid Existing Rights:

- None.

Current Management:

- WSA recommended for wilderness designation;
- OHV status closed;
- Within an existing grazing permit; and
- Annual monitoring will begin in 2007.

North Sand Hills Natural Area Instant Study Area

The North Sand Hills Instant Study Area is about 10.5 miles northeast of Walden in Jackson County.

Natural Values:

- Open sand dune environment;
- Primary vegetation is sage brush and aspen; and
- Provides scenic overview of North Park.

Current Uses:

- Recreational uses include heavy OHV use, camping, hunting, hiking and scenery viewing;
- Portions of two grazing allotments are within the Instant Study Area;
- Heavy holiday use, with up to 4000 visitors on Memorial Day weekend; and
- Two big game outfitters are permitted within the Instant Study Area.

Valid Existing Rights:

- Two grazing allotments;
- Allotment fenceline (currently in poor shape);
- Government Irrigation Ditch within eastern area; and
- No oil and gas leases.

Current Management:

- Current Instant Study Area;
- OHV status: Open on open sand dune area and limited to existing roads and trails;
- Livestock grazing management on two allotments;
- Fence exclosures to protect vegetation;
- Minimal signage to for public health and safety; and
- Monitored weekly during summer months.

B. Characterization

Trends/Forecasts

The area surrounding the Troublesome WSA has been experiencing increased use of motorized activity, and a number of new routes have been created by users. The Bighorn Park subdivision, which is within the WSA, is increasing in size and number of residents. Due to this, the BLM has instituted a temporary road closure in the Troublesome area. The proliferation of user-created routes is expected to continue.

3.3.3 Wild and Scenic Rivers

Refer to the WSR Eligibility Report for the GSFO and KFO on the Internet at http://www.blm.gov/rmp/co/kfo-gsfo/ (Map 34–Wild and Scenic Rivers Eligible Segments, **Appendix G**).

3.3.4 Backcountry Byways/National Trails

Driving for pleasure is expected to increase along the Colorado Headwaters National Scenic Byway. A planning effort is underway with the Colorado Headwaters National Scenic Byway Committee to educate the public, advertise, and develop an interpretive plan for the byway. Currently, there is a multi-agency effort to complete the Muddy Pass section of the Continental Divide National Scenic Trail. The potential routes may incorporate BLM public lands.

3.4 SOCIAL AND ECONOMIC – CURRENT CONDITIONS AND CHARACTERIZATIONS

3.4.1 Social and Economic Conditions

Because of the high level of interest in the relationship between the management of public lands and the social and economic health of the local and regional economy, BLM has procured the services of a contractor to develop both the socio-economic baseline study for the RMP planning area and to conduct the analysis of impacts of the alternatives identified during the planning process.

The study and impact analysis will be incorporated into the RMP/Draft EIS at a later time and available on the RMP revision Web Site: http://www.blm.gov/rmp/co/kfo-gsfo/index.htm by fall of 2007.

However, in the fall and winter of 2006, The Keystone Center held 19 small group discussions with representatives of local governments in north-central Colorado. These discussions were held on behalf of the BLM as part of the pre-planning process in advance of the revision of the RMPs for the GSFO and the KFO. The interviews had three primary goals:

- To gather input from communities about their vision for the landscape and the benefits they seek from public lands.
- To set the stage for strategic planning options.
- To foster collaborative relationships in which information is continually shared and updated throughout the planning process.

The findings are available in a report titled "The North-Central Colorado Community Assessment Report for the Bureau of Land Management Glenwood Springs Field Office and Kremmling Field Office". The report is available on the RMP revision Web Site: http://www.blm.gov/rmp/co/kfo-gsfo/index.htm.

Some general social-economic issues affecting public lands in the region the region include:

- Urbanization;
- Energy development;
- Transportation and commuting;
- Increased local and national demand on public lands for recreation, open space, and visual aesthetics;
- Increased impacts of public land visitors, especially OHVs, on natural and cultural resources;
- Changes in ecological conditions and reduced quality of wildlife habitat, (i.e. migration corridors and winter range conditions);
- Increased threat to communities from wildland fire;
- Changing demographics and economies; and
- Changes in ecological conditions.

CHAPTER 4
MANAGEMENT OPPORTUNITIES/MANAGEMENT ADEQUACY

Identifying management opportunities is a process of considering changes in management (opportunities to manage and administer the land and people differently) to respond to any problems with existing management practices, information gathered in the area profile, and issues and concerns raised through internal and external scoping.

This chapter is a starting point for alternative formulation by providing a list of possible management opportunities for later sorting and refining into a framework of compatible alternatives. It also is a discussion of the findings of the Kremmling RMP Evaluation Reports from 2002, which compared ongoing management actions with decisions and management objectives and actions in the RMP to determine if the RMP was serving as an effective guide for management. The findings of this report, in addition to the opportunities identified by BLM staff and the public, are included in this chapter. Also identified are questions and concerns that were raised in the RMP Preparation Plan.

4.1 AIR QUALITY

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The RMP did not specifically address any resource decisions regarding air resources or air quality. The implementation of the preferred alternative is believed to have maintained adequate air quality throughout the planning area, although monitoring data is limited. The RMP revision will need to incorporate the objectives for air quality, describe the current condition of air resources within the planning, provide actions or limitations to manage air resources, conduct appropriate analysis of impacts to air quality, ensure conformance with the State of Colorado's SIP, and provide for collaboration on regional issues with local, state and federal agencies.

The analysis of impacts on air quality as a result of activities on BLM-administered public lands should include recreational use of vehicles, construction activities, timber management/fuels treatments, and oil and gas development (including possible CBM).

B. Areas of Relative Ecological Importance to Guide Land Uses and Management

The Class 1 areas on the borders of the planning area will place the most stringent limitations on land uses and management as it relates to air quality. The Mount Zirkel and Rocky Mountain National Park areas are both monitored to track air quality degradation and to protect resource values within their areas.

4.2 GEOLOGY

The revision will consider various ways to protect unique geologic resources such as ACEC designations, and through the W&SR process.

4.3 SOIL RESOURCES

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The KFO has been assessing the health of the soil on the land it administers using the Land Health Standards since 1998. Continuing this effort is important to identify site-specific and larger-scaled soil concern areas. Where problems are due to livestock grazing, past or present, actions are being taken to improve land health. Monitoring these actions and their effectiveness is essential to moving toward meeting the standards and identifying which actions should be implemented in other allotments.

Developing and implementing travel management plans KFO-wide is critical to protecting and improving soil conditions. Funding and community involvement will be needed to support these efforts and increase their success. Increased education, especially of rangeland values and OHV impacts, is important to build user concerns for resource values.

Due to the cost of restoring soil health, a focus of maintaining or improving vegetative health to prevent soil damage should be continued. Planned projects should have funds identified for reclamation of disturbed areas, and avoidance or additional mitigation will be used in areas of highly erodible soils or areas difficult to reclaim.

Soil resource concerns are incorporated into the development of KFO's Soil/Water/Air program and budget requests, and additional soil expertise is obtained through the National Resource Science Center and state universities, as the Colorado BLM does not have any soil scientists on staff. Questions regarding soil classifications have also been answered by the NRCS's soil scientist in Craig, Colorado. Soil impacts and mitigation success monitoring should be shared with

other programs to help ensure that soil concerns are identified in the early stages when soil health is more easily protected. The current amount of field work needed to support the office exceeds the 1010 staffing.

Options for changing existing decision guidance:

- The RMP's Management Action for "intensive management to be applied to sensitive watersheds" is too general of a statement. In the revision, it may be helpful to focus on specific land use actions within a sensitive watershed that need intensive management or prioritizing areas within the watershed. Both of these actions help clarify when intensive management may be needed, and may help secure funding for these areas.
- The RMP's Management Objective of protecting and enhancing sensitive watersheds in association with actions initiated by other resource programs recognizes the ability to address soil and watershed issues through multiple resource programs. Continuing to pursue this approach will help gain funding, especially as the soil program itself is often overlooked. It also helps build concern for soils into other program's actions, which increases awareness of soil impacts and better planned actions.
- The existing Oil and Gas stipulation defines steep slopes as 40%. In the KFO, slopes of less than 40% have been difficult to control erosion and successfully reclaim. Due to the North Park geology, relocating the pads or directional drilling have been deemed unfeasible. The RMP revision should review adopting a fragile soil condition, similar to Little Snake Field Office and GSFO. This stipulation (refer to page E-9 of the Oil and Gas EIS) defines steep slopes as 35%.

  The fragile soil condition is similar to the existing "soil priority area" concept, but has a definition. Soils are defined as fragile if they are rated highly or severely erodible by wind or water, have slopes greater than or equal to 35 percent, and also have one of the following soil characteristics: 1) a surface texture that is sand, loamy sand, very fine sandy loam, fine sandy loam, silty clay, or clay; 2) a depth to bedrock that is less than 20 inches; 3) an erosion condition that is rated as poor; or 4) a k factor greater than 0.32.
- The KFO has had few fires since the RMP, so the suitability of defining steep slopes as 40% and above has not been an issue. During the RMP revision, however, it may be very appropriate to revise the Fire Plan steep slopes to 35%, to not only improve consistency and hopefully compliance, but to also reduce reclamation problems.

The 2001 KFO RMP Evaluation did not identify any major recommendations for the soil program other than to document that watershed activity plans are not being done and are being replaced by coordinated grazing plans and EAs for public land health standards.

4.4 WATER RESOURCES

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The program is staffed, funded, and used to provide soil, water, air, and riparian input for environmental analyses. In recent years, the office has not been able to use program dollars and personnel for adequate monitoring, and proactive project development relies heavily on other programs. The need for better field data to support priority actions in travel management, LHAs, recreation, energy, fuels and healthy forest initiative, and sage-grouse will require at the very least seasonal staffing and continued multi-resource monitoring efforts.

Surface Water—Looking at the overall watershed condition will help reduce nonpoint source pollution and ensure that the BLM lands' contribution to water quality is not due to land use and accelerated erosion. There are opportunities to use range, travel management, fuel, habitat, and vegetative treatments to improve watershed conditions and to protect or improve water quality on public lands and downstream.

Continuing to work with Grand County Water Information Network and others to coordinate the collection of stream data is essential to quantify water quality concerns throughout the KFO. Partnerships like the Owl Mountain Partnership also help improve management on streams with multiple owners, extending benefits beyond ownership boundaries. When opportunities arise, the BLM should pursue increasing stream segments and acquiring water rights through land exchanges, although these properties and rights are often too costly. Filing on future water rights is also becoming more difficult due to the need for augmentation water to offset the BLM's out-of-priority use. In the Upper Colorado River, there is stored water that may be purchased for off-setting releases. In the North Park area, augmentation water would have to be found for each water filing, and this may be difficult.

Groundwater—Seeps and springs are no longer viewed strictly for potential water developments but need to be assessed for sensitive species and the supporting hydrology better determined. Improved mapping of wetland areas is perhaps the first step needed.

At present, the BLM does not have a specific policy regarding fens and their management. Due to their slow rate of formation, they are generally considered irreplaceable. Many of the other federal agencies have special management or regulations for fen/mires to protect their unique wetland values. In the KFO, progress has been made in mapping some fens, but more inventory work is needed. Management of the fens is being handled on a case-by-case basis, with the Sheep Mountain, North Park fen having grazing excluded. Currently, one or two fens are on parcels proposed for a land exchange. The RMP is an opportunity for the KFO to develop some management objectives that are specific to fen/mire complexes to protect these wetland areas.

To help protect current groundwater uses, wells and springs in energy leased areas should be periodically measured for well depth and yield. These records may help document if any future energy developments are affecting the groundwater in the area.

From the 1984 RMP, there were nine wells that need additional water sampling to determine if there is adequate water quality for livestock and wildlife use. A periodic schedule of groundwater sampling may be appropriate to monitor groundwater quality. Due to the few sources of contamination, many areas could be on a very infrequent sampling schedule.

Options for Changing Decision Guidance

- Collect more groundwater information to increase understanding of potential impacts;
- Focus on stream *and* watershed condition;
- Better define water quality monitoring on streams and provide more specifics. Monitoring twice annually (at low and high flows) should be a minimum. A monitoring plan that could be amended and updated without a plan amendment is preferred. Types of monitoring to be used, locations, and purpose would be listed;
- Correct or clarify Miles/acreages and prioritize fens/mires and other riparian/wetland habitats;
- Conducting a Groundwater investigation, especially in North Park, would help ensure that hydrology is not affected; and
- Review conditions continually to keep them from degrading to a functional at-risk condition. The monitoring plan should include riparian/wetland schedules and coordinate which specialist is monitoring an area.

The 2001 KFO RMP Evaluation did not identify any major recommendations for the water resources program other than to document that watershed activity plans are not being done and are being replaced by coordinated RMPs and assessments for public land health standards.

B. Areas of Relative Ecological Importance to Guide Land Uses and Management

Due to the aridity public lands, all public stream segments that are more than 500 feet long and all wetland areas should be given priority attention in determining land uses. Fens/mires are unique within the KFO, and developing management objectives for these areas is important.

4.5 VEGETATIVE COMMUNITIES

Forests/Woodlands

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The forests within the KFO will need long-term management support to continue to provide forest products and other resource values. The current management direction through the Healthy Forest Restoration Act, the Healthy Forest Initiative, and BLM policy gives a framework for management of forests and woodlands for multiple values.

The current intensive and custodial management definitions may need to be modified as the mountain pine beetle infestation continues and aspen decline increases. Many acres of lodgepole pine that were considered for custodial management may need to be reclassified after harvest. These areas will need future thinnings and treatments to retain their vigor and to avoid another beetle outbreak in the future due to a lack of management. BLM needs to take the opportunity to treat areas with private access when adjacent landowners want joint efforts to suppress insect and disease events.

As biomass utilization increases, species currently considered non-commercial may have some product value and can be managed more intensively. By maintaining a mix of species, age, and density diversity the forested lands can provide a wider variety of healthy forests for wildlife habitats, recreation opportunities, water quality, and visual resources.

Rangelands

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Livestock and wildlife will continue to graze the rangelands within the KFO. Livestock grazing preference are allocated in AUMs to authorized permittees/lessees in the KFO. To properly manage the vegetation and still use it to provide forage for wildlife and livestock, rest or deferred rotation grazing systems will be implemented wherever feasible. The grazing systems will include use levels, generally 50 percent, to prevent livestock overgrazing. A fifty percent use maximum prevents overgrazing and, with fall regrowth, provides a solid forage base for wildlife, especially during the critical winter months. When use levels are reached or approached, the permittees must move their livestock to another pasture within the allotment or to a part of the allotment/pasture where use levels have not been reached, or permittees must move their livestock off the allotment. The KFO Range Monitoring Plan will be used to schedule periodic checks to ensure use rates are not exceeded.

Riparian and Wetlands

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

To achieve desired conditions in and help balance resource demands on riparian and wetland areas will require all programs to continue to prioritize these areas in their management actions. Currently, restrictions, avoidance, and mitigation are used to prevent or reduce impacts. The permit renewal process helps identify areas that are not suitable for livestock use.

During the RMP revision, additional closures to vehicles or recreational use should be identified to help protect more fragile riparian or wetland areas. Additional benefits could be achieved by specific projects to restore or enhance affected areas.

B. Areas of Relative Ecological Importance to Guide Land Uses and Management

Due to the aridity of public lands, all public stream segments that are more than 500 feet long and all wetland areas should be given priority attention in determining land uses. Fens/mires are unique within the KFO, and developing management objectives for these areas is important.

4.6 FISH AND WILDLIFE HABITAT

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Current management direction is not likely to provide desired fish and wildlife habitat conditions and meet future resource demands. The increased demand for resources that also provide fish and wildlife habitat could result in long-term loss of high quality vegetation and water, undeveloped areas that provide fish and wildlife security zones, and undisturbed areas that provide important breeding habitat. All these habitat components are necessary for the long-term viability of most fish and wildlife species indigenous to public lands managed by the KFO.

Resource demands that are likely to adversely affect fish and wildlife habitat within the KFO include energy and mineral development, outdoor recreation (primarily OHV travel), and private land development adjacent to public lands. Naturally occurring resource demands, including large-scale wildfire and long-term drought coupled with the resource demands listed above, could have long-lasting negative impacts on wildlife habitat if current management direction were to continue.

Table 4-1
Fish and Wildlife Habitat – Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Current Planning Decision	Is the Decision a Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Manage public land habitat to support optimum wildlife population levels, as determined by the CDOW's Strategic Plan, commensurate with public land health standards and other allocations. Emphasis will be placed on intensively managing critical and important wildlife habitats, including 326,000 acres of upland, three miles of riparian, 3,000 acres of wetlands, and 53 miles of stream.	Yes		Need to update acres and miles.
The North Park and the Upper Colorado River HMPs are being implemented. A priority for the wildlife program is to write and implement a third HMP addressing public land wildlife habitat in Middle Park. The HMPs list priority wildlife species and projects designed to improve habitat for these species.	No	HMPs were not a BLM priority for a few years, so the third HMP has yet to be written.	
Forage allocation: Range forage will be allocated to optimize big game populations and livestock production at levels consistent with the CDOW's strategic plan. In grazing allotments where optimizing for both big game and livestock is not possible, livestock production will be favored, while providing sufficient forage to support 1980 big game population levels.	Yes		Need to update forage optimized for big game population levels.
Coordination with other BLM resources and other agencies: Activities initiated by other BLM programs will be coordinated to ensure consideration of wildlife habitat values in these actions. These programs include forestry, range, lands/realty, and mineral development. The KFO wildlife program will also be coordinated with the CDOW and USFWS to ensure maximum use of mutual resources. Cooperative agreements with the CDOW will be used when necessary to jointly manage state and public lands with similar wildlife habitat values and management objectives.	Yes		
NSO stipulations will be used to protect some coal mines, grouse, raptor, bald eagle, peregrine falcon, owls, waterfowl, and shorebird nests and habitats, special status plant species, North Park Phacelia ACEC, and grouse leks.	Yes		Need to update stipulations based on current GIS data.

Table 4-1
Fish and Wildlife Habitat – Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands *(continued)*

Current Planning Decision	Is the Decision a Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Timing limitations stipulations will be used to protect crucial big game winter habitat, big game birthing areas, grouse winter habitat and nesting habitat for greater sandhill cranes, white pelicans, raptors, bald eagles, and peregrine falcons.	Yes		Need to update stipulations based on current GIS data.
STANDARD 3: Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations and ecological processes.	Yes		

In its 2001 RMP Evaluation Report, the BLM found that for wildlife habitat and threatened and endangered species, annual implementation progress is being documented, and the RMP continues to provide adequate direction for field level activities. The remaining general findings include the following:

- Sage-grouse conservation plans have been completed, and implementation is underway;
- A management plan was completed for the endangered North Park phacelia, and the USFWS prepared a recovery plan; however, their implementation is lagging;
- The USFWS issued a biological opinion concurring with the BLM's finding that grazing was not affecting phacelia and the other two endangered plant species, the Penland beardtongue and Ousterhout milkvetch; the most serious threat appears to be from OHVs; and
- The two threatened species listed for the KFO are the bald eagle and Canada lynx. The bald eagle may soon be removed from the endangered list, and no critical lynx habitat was found on BLM-administered public lands; however, linkage areas may occur, making it prudent to include the KFO in the statewide maintenance/amendment process for lynx.

In the 2002 RMP Evaluation, the BLM recommended a review of the newly completed Sage-grouse Conservation Plan to determine if the conservation measures

conflict with the implementation of any RMP decisions. If not, the required measures should be incorporated into the RMP as a maintenance action. If conflicts are found, they should be identified so that they can be resolved in a future plan amendment.

B. Areas of Relative Ecological Importance to Guide Land Uses and Management

Most of the management decisions related to fish and wildlife in the 1984 RMP can be categorized as decisions to collect additional data, cooperate with other agencies, provide/protect habitat for specific species or populations, or improve habitats for particular species. Since the 1984 RMP, certain wildlife objectives and management prescriptions (e.g., development of stocking rates for wildlife) are no longer applicable or practical due to changes in wildlife habitat conditions and population numbers. As wildlife data are updated as part of the RMP revision process, it is recommended that the KFO determine if the new information results in needed modifications to existing management prescriptions.

Management opportunities for the revised RMP could include identifying desired habitat conditions or population objectives for major habitat types that support a wide variety of game and nongame species. Once this is determined, actions and area-wide use restrictions needed to achieve desired population and habitat conditions could be identified.

Coordinating with other groups who are collecting regional data and using their data as a framework in which to interpret habitat provision/protection needs could enhance the BLM's responsiveness toward maintaining desired habitat conditions. For example, the Ecoregional Assessment of the Southern Rocky Mountains by The Nature Conservancy provides data on regional populations and regional conservation goals that might provide a larger context for the BLM to evaluate its desired habitat conditions and habitat management decisions.

Areas of ecological importance include the sagebrush steppe, riparian, and aquatic ecosystems. These areas provide critical habitat for priority species, such as big game, migratory birds, raptors, game fish, and waterfowl.

4.7 SPECIAL STATUS SPECIES

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Current management direction is not likely to provide desired special status species habitat conditions and meet future resource demands. The increased demand for resources that also provide special status species habitat could result in long-term loss of high quality vegetation and water, undeveloped areas that provide special status species buffer zones, and undisturbed areas that provide important breeding and colonization habitat. All these habitat components are necessary for the long-

term viability of most special status species indigenous to public lands managed by the KFO.

Resource demands that are likely to adversely affect special status species habitat within the KFO include energy and mineral development, outdoor recreation (primarily OHV travel), and private land development adjacent to public lands. Naturally occurring resource demands, including large-scale wildfire and long-term drought, coupled with the resource demands listed above, could have long-lasting negative impacts on special status species if current management direction were to continue.

Table 4-2
Special Status Species – Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Current Planning Decision	Is the Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
All threatened and endangered plant and wildlife habitats will be protected, as required by law and regulation.	Yes		
Phacelia RNA: *Phacelia formosula* is found in North Park, an endangered plant species site. The site is designated as an RNA, an ACEC, and is maintained for scientific study and education.	Yes		
Monitor wintering bald eagle population levels and winter habitat conditions in Middle Park and the Upper Colorado River areas.	Yes		Need to include nesting habitat.
NSO stipulations will be used to protect some coal mines, grouse, raptor, bald eagle, peregrine falcon, owls, waterfowl, and shorebird nests and habitats, special status plant species, North Park Phacelia ACEC, and grouse leks.	Yes		Need to update stipulations based on current GIS data.
Timing limitations stipulations will be used to protect crucial big game winter habitat, big game birthing areas, grouse winter habitat and nesting habitat for greater sandhill cranes, white pelicans, raptors, bald eagles, and peregrine.	Yes		Need to update stipulations based on current GIS data.
Special status, threatened and endangered species (federal and state), and other plants and animals and their habitats officially designated by the BLM are maintained or enhanced by sustaining healthy, native plant and animal communities.	Yes		

See the wildlife section for the 2002 RMP Evaluation Report findings and recommendation pertaining to threatened, endangered, and sensitive species.

B. Areas of Relative Ecological Importance to Guide Land Uses and Management

Since preparation of the 1984 RMP, there have been several changes in species designations and habitat regarding federal and state listed species. In addition, new species have been identified as BLM sensitive. As a result, RMP decisions will need to be modified to reflect these changes and the management needed to prevent adverse effects on listed species that were not considered in the 1984 RMP biological opinion.

Similar to vegetation management and fish and wildlife habitat management, management opportunities for the revised RMP could include identifying desired habitat conditions and population objectives for special status species and identifying priority species that require immediate intensive management. Once this is determined, actions and area-wide use restrictions needed to achieve desired population and habitat conditions could be identified.

Communities that should be focused on to benefit priority species such as sage-grouse, leopard frogs, bald eagles, and cutthroat trout include the sagebrush steppe, riparian, and aquatic ecosystems. Other species to focus on include the rare plants North Park phacelia, Osterhoutt milkvetch, and Penland beardtongue.

4.8 WILDLAND FIRE ECOLOGY AND MANAGEMENT

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The 1984 RMP direction for fire management states only that fire may be used as a tool to achieve resource management objectives, such as vegetation manipulation, site preparation, and control of insects and disease. Specific treatment areas would be identified in subsequent activity plans. Controlled burning would comply with all air quality maintenance requirements. Fire in areas may be identified where fire would be allowed to burn to achieve management objectives. These areas would be identified site specifically in management prescriptions and would require fewer if any suppression efforts. No fuels management direction is identified in the 1984 RMP.

The 1984 RMP also gives direction for forest management to improve forest vigor for intensive commercial management of 40,000 acres and to maintain and protect approximately 60,000 acres. Direction is toward minimizing losses caused by disease and fire.

The 2002 KFO FMP uses fire as a tool for fuels treatments but restricts the amount of acres that can be treated over a specific period. The plan does not allow for WFU,

which restricts management's ability to move large areas of treatment to the desired forest health.

WFU was suppressed in the 2002, FMP because the interspersed nature of public and private lands, the lack of federal firefighting forces to manage fire use, and the fuel bed structure of much of the planning area is that of moderate to long-term fire regime and high intensity fire behavior type. This now has to be reevaluated to account for the change in forest health due to the mountain pine beetle and the need to achieve desired conditions.

At present, only one fuels staff member is located at the KFO, and a position is being sought for an additional fuels staff member. Two permanent foresters and one term forester are currently on staff and seasonal forestry technician positions may be used as funding allows.

Biomass Markets/Economics: Markets for biomass use are limited at present. Some of the current uses are post and poles, firewood, and chips. The supply of material outstrips the current needs.

Several working groups and forums have been formed to look at biomass use in northern Colorado. Areas where biomass use can work are facility heating, cogeneration, and pellets for pellet stoves. The current supply for biomass material to be used for such endeavors presently depends on the supply as related to the mountain pine beetle epidemic. Facilities are limited in their size, the distance to the biomass material, and the duration of supply and quantity.

4.9 CULTURAL AND HERITAGE RESOURCES

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The KFO RMP was completed in 1984 before the passage of the Native American Graves Repatriation Act, the 1992 amendments to the National Historic Preservation Act of 1966, Executive Order 13007, and other key policy requirements. Allocation of cultural resources to "use categories," as required by BLM Manual 8110, Section 4, is proposed for implementation as part of the Class I Overview. The KFO RMP is silent on several key policy requirements, and program guidance contained in BLM Manual 8130, Section 13 is not addressed in the RMP. In addition, there is a need to implement Addendum 1 to the Colorado Protocol: Section 106 Requirements for Comprehensive Travel and Transportation Management Planning (2006).

The RMP revision process could provide for the continued development of a cultural resource program management framework that incorporates changes in BLM policy and law. If a Cultural Resources Management Plan is still desired, this planning effort can provide interim guidance for the cultural resources program and framework direction for the plan by allocating cultural resources to use categories

and establishing criteria for managing sites yet to be identified. Use allocations could also provide a framework for priority cultural resource areas or site types. This could allow managers to "know in advance how to respond to conflicts that arise between specific cultural resources and other land uses" (BLM manual 8110, Section 4).

A Class I overview is proposed to comply with Manual handbook H-1601-1, Appendix C, and Washington Office IM 2002-101 and to update the current GIS data base. The overview will synthesize all of the previous archaeological and historical work, will outline the prehistory and history as currently understood, will identify data gaps in our knowledge, will develop management recommendations for site types, and will develop sensitivity maps (high, medium, low) based on the potential to find cultural resources by geographical area. The information will be used to define and evaluate the nature and distribution of property types, the historic and prehistoric contexts, properties of special significance, uses to which property types may be assigned, threats to site integrity, and strategies for resource management and protection.

Other opportunities include the following:

- Continue to promote and support research partnerships with universities and museums;
- Work with Native Americans to reconnect traditional ties to the landscape and identify/protect areas of importance to them;
- Protect cultural sites by requiring and implementing monitoring stipulations of all construction in undisturbed areas;
- Work with and assist communities to develop heritage tourism programs and resources;
- Mitigate/salvage/encapsulate cultural properties/features or recover/ analyze/evaluate data;
- For oil and gas, minerals, and other large development programs, encourage developers/operators to use block inventory strategies for Gap Analysis Program blocks and other larger geographical areas;
- Establishing a proactive cultural resource management program; and
- Test single occupation sites to refine NRHP determinations and allocate sites to specific uses.

The 2001 RMP evaluations contained the following recommendations for the cultural resource program:

- Perform plan maintenance to update and include potential NHRP sites that need protection, to document the known ACECs identified through Native American consultations, and to include references to new cultural resource laws enacted since the plan was written; and

- Document why the decision at North Sand Hills was not successful and what should be done in the future to protect cultural resources in sand dune areas.

4.10 PALEONTOLOGICAL RESOURCES

Past and current management practices have had little appreciable effect on paleontological resources. There have been no reported instances of damage to paleontological resources resulting from implementing RMP management decisions. However, the paleontological resources management plan directed for development in the last RMP has not been developed. In addition, BLM policy for managing paleontological resources has not been updated since completion of the RMP. Changes in paleontological resources management policy and increases in paleontological resource data should be incorporated into the revised RMP. Decisions for inventory and management of paleontological resources could be determined based on fossil diversity, distribution, and reasons for their importance to science. Priority areas for inventory could be identified, along with future research needs.

Significant paleontological localities (i.e., National Natural Landmarks, Kremmling Cretaceous Ammonite site) need to be highlighted for each field office along with its current management situation. The RMP will need to address the adequacy of land uses in and around these localities in protecting their significant values. In addition, the paleontology program needs a pro-active component; high priority areas for research involving inventory, protection, educational benefits, and public use or interpretation.

4.11 WILDERNESS CHARACTERISTICS

The current management of the three WSAs in the KFO has been adequate to protect the wilderness characteristics of those areas. However, some problem areas have recently developed. Increased OHV use throughout the field office has begun to threaten the wilderness characteristics of WSAs. The revised RMP will need to address this issue through route designations and travel management decisions for these areas in order to continue to protect the wilderness characteristics of the WSAs. Additionally, the revised RMP will need to address BLM guidance, which requires that all WSAs be managed as VRM Class I areas.

4.12 VISUAL RESOURCES

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

There are limited planning decisions in the 1984 RMP relative to VRM. BLM policy requires that the KFO designate VRM management classes for all areas of BLM-administered land. Visual resource values are to be managed in accordance with VRM objectives and used in implementing land use decisions.

In response to increasing concerns from local communities, the BLM will conduct a VRM assessment of the condition of visual resource needs. This assessment is

needed for the major transportation corridors, population centers, and other scenic viewsheds within the KFO. The BLM will evaluate scenic quality by performing a viewshed analysis, as defined in the BLM Handbook H-8410-1 Visual Resource Inventory Manual, in specified areas that have experienced a high degree of cultural modifications since the 1984 RMP. This effort will involve working with affected towns and county representatives to gather information and measure public concern for scenic quality within sensitive viewsheds. It will also identify VRM inconsistencies among the BLM, USFS, and community planning documents.

The 2002 RMP Evaluation Report found that the 1984 RMP did identify VRM classes and that the RMP provided sufficient direction for field level activities. However, the KFO staff expressed a desire to revisit VRM designations because in some areas the current designations do not adequately account for current land uses, impacts, and visitor/resident desired setting prescriptions.

Questions that were identified in the RMP preparation plan include how should we integrate changes in county and community planning decisions on open space, scenic quality, and aesthetics and how should we manage sensitive view sheds and corridors. Should we address only I-70, or all state highways, busy county roads, and community viewsheds as well?

B. Areas of Relative Ecological Importance to Guide Land Uses and Management

Sensitive viewsheds were discussed in the Chapter 3, Area Profile, VRM.

4.13 CAVE AND KARST RESOURCES

The 1984 RMP did not specifically address management objectives or management actions for cave and karst resources.

4.14 ENERGY AND MINERALS

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The Kremmling Oil and Gas Amendment of 1991 is currently the basic guide for oil and gas resource management within public lands administered by the KFO. Guidance for all other mineral resource management is provided in the 1984 KFO RMP. Together, the Kremmling Oil and Gas Amendment (1991) and the KFO RMP (1984) provide adequate guidance to effectively meet minerals management objectives at this time. However, energy development in Colorado has increased dramatically since the 1984 RMP. The RMP revision process provides an opportunity to re-evaluate management practices and objectives related to energy and mineral resources. Changes in technology, resource development potential, designation status of lands and resources, and BMPs should be addressed in the revised RMP.

The following are management issues that should be examined in the revised RMP:

- CBM has not been addressed in previous plans. Resource development potential, COAs, production and operation requirements, mitigation measures for resource conflicts, water availability and disposal issues, short term/long term cumulative environmental and social impacts, strategy for establishing a baseline and monitoring impacts, permit process and drill plan development and BMPs are all management issues that the RMP needs to address.
- Resolving resource conflict and management inconsistencies. Use conflicts among coal production, CBM development, and oil and gas development.
- Review lease stipulations and COAs for energy and mineral resource development to ensure consistency with management objectives.
- Re-evaluate suitability of lands open to mineral entry. Two sites specific for consideration are the Kremmling Cretaceous Ammonite site and the Wolford Reservoir area. At minimum NSO should be stipulated for the Kremmling Cretaceous Ammonite site to protect the integrity of the site. Wolford Reservoir was developed after the 1984 RMP, therefore a valid evaluation of the impacts from energy development or mineral entry were not possible at that time, area should be re-evaluated for mineral entry suitability.
- Uranium – resource potential and development, management objectives, COAs, production requirements.
- Alternative energy development – suitability of KFO administered lands for alternative energy source development (solar, wind, etc.).

4.15 LIVESTOCK GRAZING MANAGEMENT

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Livestock management has been working well under the 1984 RMP. However, changes in the revised RMP would help better manage livestock grazing. The changes include the following:

- Identifying scattered parcels of land that could be available for grazing;
- Using allotments that become vacant as common area relief pastures when forage is not available due to vegetation treatment or natural events (wildfire, drought, wildlife damage to forage);
- Selling or trading small isolated tracts of land in order to continue to consolidate BLM lands;
- Due to potential increase in oil and gas development in North Park, increased recreational use, the spread of noxious weeds, sage-grouse, and wildlife utilization of AUMs, reducing AUMs to accommodate these other multiple use needs or issues/concerns;

- Allotments that we may need to review for potential conflicts/concerns in North Park include 07163 (OHV), 07050 (OHV), 07116 (threatened and endangered), 7031 (oil and gas), 7080 (oil and gas), 7141 (riparian), 7093 (riparian), 7020 (threatened and endangered), 7150 (riparian);
- Allotments that we may need to review for potential conflicts/concerns in Laramie River area include 07258 (riparian); and
- Allotments that we may need to review for potential conflicts/concerns in Middle Park include 7588 (WSA), 7565 (WSA), 7580 (Buffalo Park subdivision and WSA), 7566 (Recreation/threatened and endangered), 7505 (threatened and endangered), 7521 (Granby Leck) 7527 (Native Cutthroat trout).

The 2002 RMP Evaluation Report found that the 1984 RMP was still an effective guide for managing livestock grazing. It also identified the following findings for livestock grazing management:

- The staff expressed the importance of having good trend data. Eighty percent of the permit renewals incorporate changes, and without good trend data it is difficult to measure success or failure;
- The RMP provides adequate direction for field level activities; and
- Implementing actions are being documented annually. This could serve the same function as the now discontinued Range Program Summary, if incorporated into the next RMP Update Report and made available to the public. (See also General Finding/Recommendation 3).

Questions that were identified in the RMP Preparation Plan include whether or not the current allotment boundaries are suitable or if they need to be updated, and whether or not the BLM should continue to use I, M, and C management categories, and if not, how should allotments be categorized?

4.16 RECREATION AND VISITOR SERVICES

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

General issues facing recreation managers include the following:

- Rapid regional population growth;
- Changing population demographics (US Census Bureau 2002);
- Increasing dispersed recreation use, both summer and winter;
- Popularity of public lands as a "backyard" recreation destination for local communities;
- Adjacent private lands and in-holdings;

- Economic and social value of recreation and tourism;
- Citizen desire for a greater role in the management of their public lands;
- Budget allocations, which are flat or decreasing despite aging facilities and increasing demands;
- Technological advances, such as ATVs, utility terrain vehicles, and other OHVs, and mountain bikes, as well as better outdoor equipment and clothing; and
- Integrating recreation use with sustainable management of other resources.

Based on the issues above, the KFO does not have the capacity in terms of staff, law enforcement, annual budget, or existing recreation facilities (including trails) to adequately manage future resident recreation demand alone.

Identify Opportunities to Manage Differently and Administer the Land/People Differently

Special Recreation Management Areas—The KFO has two SRMAs (Map 26–Special Recreation Management Areas, **Appendix G**) and needs to review existing SRMA designations to ensure compliance with H-1601-1 - Land Use Planning Handbook guidance. In particular, the Upper Colorado River SRMA was identified in the 1984 RMP and its boundary adjusted in the 2000 RMP Amendment because of its high recreational use. The North Sand Hills SRMA was also identified in the 1984 RMP because of its high recreation use. An implementation plan was not completed for the Upper Colorado River SRMA, and no implementation plan was completed for the North Sand Hills SRMA. However, in 1988, an Off-Road Vehicle Implementation Plan did address 640 acres of the North Sand Hills SRMA by limiting travel to existing roads and trails.

As per the revised BLM Handbook - H-1610 -1 Land Use Planning Handbook, the KFO must identify a distinct, primary recreation-tourism market (destination, community or undeveloped), as well as a corresponding recreation management strategy for the remaining SRMAs. If no distinct, primary recreation-tourism market can be identified, then the administrative identification of an SRMA should be removed.

The KFO is required to identify new SRMAs during the land use planning process. Where recreation demand from a recreation-tourism market requires maintenance of setting character or production of associated activity, experience, and benefit opportunities/outcomes, the area should be identified and managed as an SRMA, rather than being custodially managed as an ERMA. BLM-administered public lands along the Blue River and in the Dice Hill, Strawberry, Wolford Mountain, Independence Mountain area, along with lands in North Park and along the I-40 corridor between Kremmling and Hot Sulphur Springs (Colorado Headwaters) need to be reviewed. This is to determine if a distinct, primary recreation-tourism market requiring a corresponding and distinguishing recreation management strategy exists.

In areas where the BLM and partners determine that recreation demand from a recreation-tourism market exists, the KFO will need to identify new SRMAs.

The following section provides a summary of the current and potential SRMAs. Arizona State University and the KFO recreation staff will be collecting additional visitor use data in the KFO during summer 2007 to help determine the appropriate management for these areas, for example whether they should be SRMAs or ERMAs. This information provides a starting point for the SRMA discussion in order to determine how to manage the land and people differently.

Existing SRMAs

Upper Colorado River SRMA (12,237 acres)

Primary recreation-tourism market: Destination Recreation Tourism Market (National and State-wide)

Potential Recreation Management Zones: Each zone would offer distinct outcomes (such as activities, experiences, and benefits) and settings (such as physical, social, and administrative) and would require distinct administrative and management actions (such as marketing and monitoring:

- Pumphouse to Statebridge—float-boating, wild trout fishing, and camping;
- Pumphouse to Confluence—wild trout fishing, technical whitewater rafting (Class IV and V);
- Confluence to CDOW Bridge—gold medal fishing; and
- CDOW Bridge to Hot Sulphur—Kayaking.

Potential Management Change/Considerations: Consider expanding the boundary of 12,237 acres to 27,963 acres to include the corridor east to Hot Sulphur and adjacent public lands within the corridor where motorized and nonmotorized recreation is occurring. Visitor preferences might lead to management of a more front country/middle country setting.

Current Visitor Use data: The Upper Colorado River ranks second in the state for the number of float-boating user days in (Colorado River Outfitters Association 2006), the first being the Arkansas River. There have been a series of visitor surveys done on the Upper Colorado River between Pumphouse and State Bridge (1978, 1986, 1991, and 2000/2001). The information below summarizes the highlights of these reports, including suggested management changes.

In 1978, a study was completed during the river season (Lime and Knopf 1979).

Demographics: 89 percent of visitors were from Colorado, the major age group was 26 to 40, and 43 percent of the people were college graduates or higher.

Use patterns: Most were day users. Group size ranged between to and greater than 50, with most parties between 11 and 30; three percent of groups were greater than 50; 79 percent of commercial users and 50 percent of private users were first-time users.

The primary reason to visit the river was to run rapids, with scenery being second. Most people felt that the river and its surrounding areas were in good condition. Other patterns included 27 percent of people planned the trip within a week of going; 27 percent planned the trip between a week and a month; 28 percent planned the trip between one and six months in advance; 79 percent of commercial users and 50 percent of private users were first time users; and 29 percent had been on the river more than five times.

Issues: Problems identified in the survey are inadequate toilet facilities at the put-in and take-out; too few toilets along the river; litter on the banks; people drinking alcohol; too many people on the river; too few garbage cans; human waste; OHVs in the river area; inconsiderate people; and crowded put-in.

Management Actions: 47 percent of the people supported restricting numbers of people on the river, 28 percent opposed; 52 percent of users felt there should be controls to avoid a conflict with motorized use; 58 percent support carry-out garbage; 36 percent support requiring approved first-aid equipment; 38 percent support prohibiting motorized boats; 24 percent support fires in designated spots; 21 percent support developing hiking trails; and 30 percent support prohibiting OHVs in vicinity of river.

A study by the Denver Water Department (1986) focused on commercial outfitters only. **In 1986**, it was believed that 39 outfitters were active on the Upper Colorado River between Kremmling and Dotsero.

Demographics/Use patterns: The single largest reason vacationers mentioned for taking a trip on the Upper Colorado River was proximity to metropolitan Denver and other communities. Fifty-five percent of those surveyed were male; commercial parties averaged 24 people, and private parties averaged 5.6; most use occurs between the first week in July and the third week in August, with the first and second week of August being the busiest; 80 percent of use was day use; seventy percent of users interviewed were taking their first river trip.

Sightseeing and photography were the most important reason for coming to the Upper Colorado River, followed by rafting and fishing.

In 1991, a study was done that was directed at private boaters and anglers only (Campbell 1992). The survey of anglers did not generate a large enough sample size to generalize.

Demographics: 91 percent of visitors averaged 42 years old and were educated beyond high school; males outnumbered females six to one; the commercial to private ratio was 16:1 in one location of the document and 19:1 in another; and 80 percent of respondents were experienced boaters. Most boaters came with family and friends.

Issues: Generally, people did not feel the area is overcrowded yet. The perception of crowding occurred primarily at river camps, picnic sites, and boat ramps. Some visitors felt these areas were sustaining environmental damage, such as ground cover degradation and littering.

Some conflicts occur between boaters and shoreline users and between private and commercial groups. Eight-five percent of the visitors prefer to boat and fish above all other activities within a natural setting with minimal development; 58 percent felt environmental damage and use conflicts were due to too many people concentrated in one area; the hot springs area was identified as a site of heavy use and environmental damage; over 80 percent indicated they would prefer some additional management to reduce environmental damage and alleviate conflicts between different user groups; boaters and anglers wanted more regulation and interpretive information but did not want use limits or a permit system.

In 2000/2001, a user survey was completed during the river season (Titre and Schuster 2002). Both private and commercial boaters were surveyed.

Demographics/Use Patterns: 90 percent of the private boaters surveyed were from Colorado, and 78 percent were repeat visitors; 22 percent were first time visitors; private boaters averaged six years of experience; 70 percent were day users, spending between two and six hours on the river; 42 percent said rafting was their most important activity on the river, followed by kayaking and then fishing; 79 percent put in at Pumphouse; 41 percent take out at Radium, 28 percent at Rancho del Rio, and 23 percent at State Bridge; 22 percent stop at hot springs; 26 percent of users felt crowded.

Thirty-six percent of commercial users were from Colorado; 26 percent commercial visitors were repeat visitors; 74 percent of these were first-time visitors; commercial clients averaged less than one year of experience; 93 percent were day-users and averaged four hours on the river; 76 percent of boaters reported rafting as their most important activity, followed by fishing; 82 percent put in at Pumphouse, 68 percent take out at Radium, 17 percent at Rancho del Rio, and 13 percent at State Bridge; 51 percent stop at hot springs; 16 percent felt crowded; rafting was the most popular boat for both groups, followed by kayaking. Private users complained about paying high private fees to access boat ramps, particularly at State Bridge.

Management Actions: Management actions that received a positive response were protect historical/cultural resources and artifacts; prevent impacts on shoreline vegetation; prevent motorized watercraft from using the river; consider daily use

permits to reduce congestion on the river; require the packing out of human waste; and reserve river camping sites in advance.

Management actions that received a negative response were provide additional picnic areas along the river, increase river ranger patrols, and limit group size.

There was a location on this survey for open-ended questions. The following summarizes the comments that were made: 56 percent of private boaters agree with considering daily use permits to reduce congestion on the river; 65 percent of these boaters would like to see a daily use permit for commercial operators only; and 35 percent of these would not mind a daily use permit for commercial and private users.

Issues: No river etiquette of commercial rafters; commercial companies taking over picnic areas without asking; being forced out of campsite by commercial group; discourteous behavior; people camping for the entire weekend; running through camp; loud music; refusing to share camp; parking in no parking areas; and nudity at the hot springs.

In summary of all the surveys, each suggested a number of ways to manage the land and people differently. Some suggestions have been implemented, while others have not. The 2007 visitor use survey, focus groups, and informal interviews will provide more detailed information regarding the recreation demand, recreation supply (i.e., setting conditions), and recreation management and administration (i.e., permit system and developed facilities).

North Sand Hills SRMA (1,899 acres)

Primary recreation-tourism market: Destination recreation tourism market (National, Front-Range Communities, such as Fort Collins, Loveland, Cheyenne, Wyoming).

Potential Recreation Management Zones: (Note: each zone would offer distinct outcomes, such as activities, experiences, and benefits, settings, such as physical, social, and administrative, and would require distinct administrative and management actions, such as marketing and monitoring.

1) Dunes – OHV activities
2) Surrounding public lands outside the Dunes – OHV activities, camping

Potential Management Change/Considerations: Consider modifying the current boundary, depending on a potential land acquisition. Due to the Instant Study Area status, interim management policy for wilderness applies to a portion of the SRMA. If monitoring indicates degradation, management actions may be instituted.

Current Visitor Use data: **In 1991**, an on-site survey was conducted to identify visitor numbers and their temporal and social distribution, to identify resource impacts and their locations, to compile visitor expectations and preferences, to identify

management issues and recommendations for such, and to provide base maps for the management area (Eley and Alden 1992). Survey methods included on-site surveys and observations, photo-documentation, and open houses. Data was collected Memorial Day weekend through Labor Day weekend.

Demographics/Use Patterns: The total use for the entire survey period was 7,197 visitors. Of this, 4,400 were present over the Memorial Day weekend (1,100 each day, over four days). The Independence Day and Labor Day weekends saw the next highest use levels, with approximately 150 and 250 visitors per day. Regular weekends saw visitation ranging from 11 to 60 visitors per day. Weekday use saw 11 to 14 users. Consequently, holidays saw 83.4 percent of all use, other weekends saw 13.8 percent of use, and weekdays saw 2.8 percent of use. A map was created to demonstrate locations of relative intensity of use in relation to camping, staging areas, and recreational activities. Forty-two and a half percent of visitors reported riding ATVs (4-wheelers), and 15.6 percent were riding three-wheelers.

Visitors to the North Sand Hills predominately arrive with family or as a group of acquaintances. Group size was found to range from two to ten, with occasional groups as large as 21. Motivation for visiting the area on weekends showed that being with friends/family ranked highest, followed by being close to nature, adventure seeking, and independence, in that order. Holiday weekends saw seeking adventure ranked highest, followed by being close to nature, being with friends, then independence, in that order. Visitor preferences compatible with the management area in order of priority were fishing, camping, hiking, hunting and mountain biking.

Visitors' issues included speeding in campgrounds, litter and trash within the area, and safety in regard to the use of OHV whip flags, particularly on the open dunes. User preferences in regard to development were prioritized for toilets, potable water, and on-site trash disposal. Facilities, such as improved roads and developed picnic and camping areas, were ranked as the lowest priorities. Eighty percent of visitors felt that resources could easily be disturbed and that user perception could be enhanced by interpreting natural and cultural values and qualities of the area.

The survey on management activities was limited to the BLM permitting system, law enforcement contact, and overcrowding concerns. Fifty percent of those surveyed had little or no knowledge of the BLM permitting system. In regard to law enforcement and ranger contact, visitors were understanding of increased contact on high-use weekends, while regular weekend visitors were not interested in contacts by law enforcement or rangers. In regard to crowding, 35 percent of weekend users were looking for group isolation or some type of limits on visitor numbers. Holiday weekend visitors were looking for a social experience and were satisfied with no limits on visitor numbers.

In 2004, an on-site survey was completed for the North Sand Hills SRMA. The purpose of this study was to question the North Sand Hills OHV user community for what they may be willing to pay for different uses, and if they are willing to pay,

what their satisfaction level is with the area. This study also took data from the 1991 study for comparison (Antilla 2004). This was a random sample survey that included 117 respondents from 698 surveys that were conducted on-site.

Demographics/Use Patterns: 64 percent of those surveyed were males and 36 percent were females. Ninety-two percent of those surveyed were Colorado residents, six percent were from Wyoming, and two percent were from other states. Eighty-four percent of those surveyed camped at the North Sand Hills during their visit, 25 percent of those camped in a self-contained recreational vehicle, 23 percent stayed in a trailer, seven percent stayed in a camper, and 36 percent stayed in tents. Of those surveyed, 85.5 percent were riding ATVs, with others on motorcycles, trucks, jeeps, and sand rails.

In regard to new facilities, the survey found that trash pickup and receptacles, phone service, and rangers were moderately important to visitors, while picnic tables and recreational vehicle hookups were the least important. Willingness to pay for new facilities illustrated that, while including those unwilling to pay (pay zero), respondents were willing to pay an average of $2.70 for day use, $4.74 for overnight, and $8.37 for a weekend pass. These values may be inflated due to some respondents listing the willingness to pay $20.00 for all three categories.

Willingness to pay was also broken down within age groups for each category. This showed that those under the age of 25 were willing to pay the least, those between the ages of 25 and 40 were willing to pay the most, with the exception of overnight use. Those above 40 years of age were willing to pay the second most for day use and weekends and the most for overnight stays.

Additional information collected through this survey was where visitors spend their time recreating in the morning, afternoon, and evening, and there were additional comments on user requests for future management needs.

In 2006, on-site surveys were also conducted to help Jackson County and the North Sand Hills Working Group with a strategy for future management of the North Sand Hills. Surveys were conducted on Memorial Day and Independence Day weekends. A third on-site survey was conducted in October to collect visitor data during the hunting season (Short Elliot Hendrickson, Inc. 2007). These surveys involved identifying specific management issues and recommendations and the need for facilities and services and use levels and patterns. The survey instrument used provides poor quantitative data or was implemented poorly, with many general and varied answers provided by the public. The surveys also contradict themselves by stating an estimated 2,500 visitors were on-site for the Memorial Day and Independence Day weekends within their summaries. However, within the survey, "estimated visitor days" were listed as 1,682 for Memorial Day and 516 for the Independence Day weekend. This may be a documentation error on the part of the surveyors.

This was a random survey. On Memorial Day weekend, 56 surveys were conducted of an estimated 2,500 visitors. During the Independence Day weekend, 30 surveys were conducted of an estimated 2,500 visitors. The third survey done in October was different from the first two in that it was an observational survey of visitors on-site with casual contacts. From the survey results, casual conversation and questions were related to the visitors to gather input on their thoughts on the current status and management of North Sand Hills and what should occur in the future.

Most questions within the survey allowed participants to answer in general terms, with numerous different answers given. For instance, the holiday weekend survey takers asked visitors for what "sand vehicles" were used. Respondents listed several types of motorized vehicles, including snowboards/wakeboards, but the numbers of each type was not recorded. Another example is that groups of people were asked where they were from and they provided several different locations, which is credible due to the North Sand Hills being a destination site. However, a note is made that this question has "overlap and multiple answers reflected," potentially skewing the numbers provided in the survey results. The summary of responses also included "Virtually all input indicated yes," when asked if the visitors were familiar with "stay the trail" and "tread lightly" and other OHV industry and government policies.

This survey has been done as part of the North Sand Hills Working Group efforts to create a management strategy for the North Sand Hills. This group was formed in 2005 and consists of a cooperative interagency resource group with representation from the BLM, Jackson County, Colorado State Parks, the USFS, Colorado Land Board, The Nature Conservancy, CDOW, and user groups. Jackson County obtained funding through a Great Outdoors Colorado grant for this survey and its associated strategy.

Potential SRMAs: There are many different options for identifying SRMAs. For these areas, the BLM will need to determine whether a distinct, primary recreation-tourism market (destination, community, or undeveloped) exists, as well as a corresponding recreation management strategy. Some potential SRMAs are listed below.

Strawberry (8,206 acres)

Primary recreation-tourism market: Community Recreation Tourism Market (East Grand County community residents. However, the adjacent Arapahoe National Forest Recreation Area is becoming a mountain biking destination for Front Range communities).

Potential Recreation Management Zones: (Note: each zone would offer distinct outcomes, such as activities, experiences, and benefits, settings, such as physical, social, and administrative, and would require distinct administrative and management actions, such as marketing and monitoring.)

- Area connected to the USFS Phases Area – Mountain Biking, OHV activities;
- Area along the Fraser River – Fishing, one of the few stretches of the Fraser River with public access.

Potential management change/considerations: The BLM will need to work with the USFS when developing a recreation management strategy.

Current visitor use data: None. The BLM will be obtaining visitor use data during summer 2007 through informal interviews and a potential focus group.

Wolford Mountain (42,538 acres)

Primary recreation-tourism market: Community Recreation Tourism Market (West Grand County community residents. However, the area is moving toward a destination market due to its becoming a motorized recreation destination for Front Range communities).

Potential Recreation Management Zones: (Note: each zone would offer distinct outcomes, such as activities, experiences, and benefits, settings, such as physical, social, and administrative, and would require distinct administrative and management actions, such as marketing and monitoring.)

- Play Area – Intensive OHV use;
- Sidewinder Trail – Technical 4x4 route for jeeps;
- Wolford Mountain – Motorized use (single track) and nonmotorized use;
- North of Wolford Mountain – less developed, hunting;
- Reservoir and Muddy Creek – Fishing and water-based activities; and
- Kremmling to Wolford Mountain Hiking Trail – nonmotorized use.

Potential management change/considerations: There is a network of routes that provides locals and visitors motorcycle and ATV use. These trails see moderate to heavy use from the local community and increasing use from visitors outside of the Grand County area. This network of routes has areas and sections that are disconnected from one another in places. This does not provide a quality experience for these users, and it may need to be evaluated to provide a free-flowing network of routes that benefit these user groups. Additionally, as the Wolford Mountain area continues to see a complete cultural survey, future routes may need to be closed, with access and connector routes being displaced. An effort should be made to reroute or find other options for route networking as needed. There is also an opportunity to better identify mechanized routes for mountain bikes in the area.

Current visitor use data: User logs from 2005 and 2006; Scoping comments during the Wolford Mountain Travel Management Planning process; Mesa State College

collected visitor use information during hunting season in November 2006. The BLM will be obtaining additional visitor use data during summer 2007 through informal interviews in the area and a potential focus group. Traffic counters on County Road 224, Wolford Mountain Motorcycle Trail and County Road 26 have provided limited and inaccurate data due to their placement and their sensitivity to rain, dust, and other natural elements.

Dice Hill (4,932 acres)

Primary recreation-tourism market: Undeveloped Recreation Tourism Market (National, state-wide, and local for hunting and Front Range and local communities for summer activities and snowmobile use).

Potential Recreation Management Zones: (Note: each zone would offer distinct outcomes, such as activities, experiences, and benefits, settings, such as physical, social, and administrative, and would require distinct administrative and management actions, such as marketing and monitoring.)

- Motorized Zone would allow for use of motorized vehicles during summer, fall, and winter seasons; and
- Nonmotorized Zone would provide for a more natural back-county setting.

Potential management change/considerations: Additional data will need to be collected to determine this area's potential for an SRMA. Need to work with surrounding land owners and other government agencies when developing a recreation management strategy.

Current visitor use data: Mesa State College collected visitor use information during hunting season in November 2006. The BLM will obtain additional visitor use data during summer 2007 through informal interviews in the area.

Colorado Headwaters (public land between Kremmling and Hot Sulphur Springs, 24,340 acres)

Primary recreation-tourism market: Undeveloped Recreation Tourism Market (Grand County communities).

Potential Recreation Management Zones: (Note: each zone would offer distinct outcomes, such as activities, experiences, and benefits, settings, such as physical, social, and administrative, and would require distinct administrative and management actions, such as marketing and monitoring.)

- Drowsy Water—Nonmotorized, limited access, hunting, camping, fishing, horseback riding. Need to identify routes that are open to the public through USFS that access BLM. This area potentially has more than limited access, and BLM law enforcement officers have identified new user created motorized routes that begin from Kinney Creek, accessing Smith Creek to

the east and potentially Music Mountain Area that abuts to USFS land off of Cabin Creek Road;

- Kinney Creek/Smith Mesa/Corral Creek/Black Mountain—Motorized use, full public access, hunting, camping.

Potential management change/considerations: Additional data will need to be collected to determine this area's potential for an SRMA. Need to work with surrounding land owners and other government agencies when developing a recreation management strategy.

Current visitor use data: None. The BLM will be obtaining visitor use data during summer 2007 through informal interviews.

Blue River Corridor (3,795 acres)

Primary recreation-tourism market: Destination Recreation Tourism Market (Front Range communities and Grand and Summit County communities).

Potential Recreation Management Zones: (Note: each zone would offer distinct outcomes, such as activities, experiences, and benefits, settings, such as physical, social, and administrative, and would require distinct administrative and management actions, such as marketing and monitoring.)

- Green Mountain Dam to Spring Creek Road—Kayaking and float-boating; and
- Spring Creek Road to Confluence—Float-boating and pedestrian fishing access.

Potential management change/considerations: Additional data will need to be collected to determine this area's potential for an SRMA. Need to work with surrounding land owners and other government agencies when developing a recreation management strategy.

Current visitor use data: Arizona State University and the KFO will be collecting additional visitor use data along the Blue River Corridor during summer 2007.

Independence Mountain (26,998 acres)

Primary recreation-tourism market: Undeveloped Recreation Tourism Market (Jackson and Routt Counties and nearby Wyoming communities).

Potential Recreation Management Zones: (Note: each zone would offer distinct outcomes, such as activities, experiences, and benefits, settings, such as physical, social, and administrative, and would require distinct administrative and management actions, such as marketing and monitoring.)

- Independence South/Mansfield Draw—Limited motorized access, hunting, camping, horseback riding;
- Fisher Draw—Motorized use (4-wheel and ATV), hunting, camping, horseback riding; and
- Independence North—motorized use, full public access, hunting, camping.

Potential management change/considerations: Additional data will need to be collected to determine this area's potential for an SRMA. Need to work with surrounding land owners and other government agencies when developing a recreation management strategy.

Current visitor use data: None. The BLM will be obtaining visitor use data during summer 2007 through informal interviews.

Bull Mountain (13,030 acres)

Primary recreation-tourism market: Undeveloped Recreation Tourism Market (Larimer and Jackson Counties, Front Range and nearby Wyoming communities).

Potential Recreation Management Zones: (Note: each zone would offer distinct outcomes, such as activities, experiences, and benefits, settings, such as physical, social, and administrative, and would require distinct administrative and management actions, such as marketing and monitoring.)

- Crazy Mountain—Limited motorized access and use, hunting, camping, horseback riding;
- Bull Mountain—Motorized use (4-wheel and ATV), hunting, camping, horseback riding; and
- Red Mountain—Limited motorized access and use, hunting, camping, horseback riding.

Potential management change/considerations: Additional data will need to be collected to determine this area's potential for an SRMA. Need to work with surrounding land owners and other government agencies when developing a recreation management strategy.

Current visitor use data: None. A public meeting with local landowners will be held this spring. The BLM will be obtaining visitor use data during fall 2007.

Natural Resource Setting Prescriptions—The 1984 RMP did not carry forward the ROS classes that were identified in the draft RMP/draft EIS. As a result, the KFO has not been managing the setting according to specific ROS classes.

As per the H-1601-1 - Land Use Planning Handbook, for SRMAs, the KFO must prescribe recreation setting character conditions necessary to produce or maintain

recreation opportunities and facilitate the attainment of targeted recreation experiences and beneficial outcomes.

Carrying Capacity—Recreational carrying capacity can be determined and managed by prescribing specific social setting classes to meet targeted recreation objectives within SRMAs. The RMP revision will involve identifying recreation objectives and prescribing necessary social setting conditions for each SRMA. The prescribed social setting conditions may require setting use levels to maintain or enhance the visitor's achievement of targeted recreation objectives (experience outcome and benefit outcome). Carrying capacity issues will likely emerge for the Blue River and the Upper Colorado River SRMAs.

Tourism—Future recreation demand for outdoor recreation opportunities found on public lands presents a possibility for tourism to increase its contribution to the stability of the local and regional economy. The KFO could work more actively with local communities to promote appropriate local recreation opportunities.

Cooperative Management—Current and predicted budget and staffing levels highlight the need to work more cooperatively with recreation-tourism partners. Other potential partnerships could extend from trail construction/maintenance to include management of activities such as climbing, boating, and camping/picnicking (campgrounds).

Special Recreation Permits—It is a policy of the BLM KFO to not accept new SRP applications on the Upper Colorado SRMA. All upland permit applications will be evaluated to determine if there is a public need/benefit to the new commercial activity and meets the land use management plan objectives. The BLM KFO is accepting new applications for commercial and competitive events.

Consistency and Coordination with Other Plans—Communities seeking to diversify their economies through recreation tourism on public lands will need to support the KFO with staff time, law enforcement, funding, and facility development to accommodate increases in visitation.

Opportunities exist in the Kremmling, Granby, Hot Sulphur Springs, and Walden areas for the BLM to further administrative coordination with the communities and other partners to improve the quality and quantity of existing recreation opportunities.

4.17 COMPREHENSIVE TRAILS AND TRAVEL MANAGEMENT

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

For motorized use, many aspects of the management direction for motorized recreation set forth in the 1984 RMP has been useful. However, the RMP did not foresee the great increase in OHV use throughout the ERMA and the concentration

of such use in specific areas. While the 1988 Off-Road Vehicle Implementation Plan designated some areas as limited to existing trails, the increase in OHV use and popularity has produced route proliferation in all of the KFO.

For nonmotorized vehicle use, increased levels of use have created conflicts between motorized and nonmotorized users on trails, leading to newly created trails through intensive and casual use. While a few designated foot trails exist within the KFO, more emphasis needs to be placed on planning for, implementing, and maintaining trails that contribute to nonmotorized opportunities. Areas where there is intensive nonmotorized use include Strawberry, Sheep Mountain, and the Upper Colorado River SRMA.

Management Adequacy—Based on the current population growth demand and increased recreation use, the KFO does not have the capacity in terms of staff, law enforcement, annual budget, or travel routes to adequately manage future travel demands.

Management Opportunities—The following represent the primary opportunities for change regarding comprehensive trails and travel management:

- Identify ROS classes for KFO;
- Delineate TMAs;
- Change the designation of most OHV travel areas from "Open" to "Limited to Designated Routes";
- Address all comprehensive travel management planning to include all resource use aspects (such as recreational, traditional, casual, agricultural, commercial, and educational) and accompanying modes and conditions of travel on the public lands, not just motorized or OHV activities. Acceptable modes of access and travel for each TMA should be identified. In developing these areas, the following will be considered:
    - Consistency with all resource program goals and objectives,
    - Primary travelers,
    - Objectives for allowing travel in the area,
    - Setting characteristics that are to be maintained (including recreation opportunity system and VRM settings),
    - Primary means of travel allowed to accomplish the objectives and to maintain the setting characteristics, and
    - Choosing and developing individual roads and trails, rather than simply using inherited roads and trails. Most existing roads and trails on public lands were created by use over time, rather than planned and constructed for specific activities or needs. Instead of a decision-making process to decide which individual roads and trails should be closed or left open,

consider a broader range of possibilities for management of individual roads and trails, including reroutes, reconstruction or new construction, as well as closures; and

- Identify and solidify partnerships through the travel management planning process to help implement and manage future travel networks.

4.18 FORESTRY

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The continuation of current management and volume offering levels through timber sales and potential stewardship projects will not be able to keep up with the large-scale impacts of dead and dying lodgepole pine forests. A continued buildup of fuels in the forest may create large-scale forest fires that could severely affect treated and regenerated forest stands, as well as other resources, such as water quality and wildlife habitats. An increase in harvest levels for 5 to 10 years is needed to salvage as much of the dead timber as possible to create a better mosaic of age and size classes to reduce the likelihood of fire and to provide fire breaks to slow or stop the spread of fires. The existing road system and any future roads constructed will provide access for fire suppression and additional forest health treatments. In addition, there is a need for an updated inventory, and other considerations include biomass and utilization, stewardship and alternative contracting methods, and multi-agency collaboration in terms of forest health and landscape management.

4.19 LANDS AND REALTY

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Opportunities for change could include the following:

- Reevaluate selected lands and possible additional lands for disposal; additional lands need to be a separate list from the original disposal list that qualifies under the Federal Land Transaction Facilitation Act.
- Create designations on public land adjacent to private lands that would benefit the KFO; FLTFA monies can only be used for acquisitions adjacent to designated areas;
- Identify lands for retention and lands for acquisition;
- Designate corridors that the KFO would prefer for developing ROWs and terms and conditions for these corridors that would minimize environmental impacts and limitations;
- Designate areas for communication sites;
- Designate ROW avoidance and exclusion areas;

- Designate existing and potential development areas for renewable energy projects (wind and solar);
- Determine where and under what circumstances authorizations for use, occupancy, and development may be granted; and
- Designate access routes that the KFO needs to acquire for management purposes.

The 2002 RMP Evaluation Report found that the 1984 RMP needed to be revised to update Appendix C of the RMP ROD and to incorporate updated decision guidance in Appendix C of the Land Use Planning Handbook. Specifically, it identified the following findings for ownership consolidation:

- The list of lands available for disposal in Appendix C of the RMP is being maintained as disposal actions occur and annual implementation progress is being documented;
- The staff expressed a desire to add the 1,450 acres described on page 14 of the approved RMP as available for exchange to the list of lands available for disposal in Appendix C of the RMP; these lands fit the Category I Special Exceptions described in Appendix C, on page 67; and
- The list identifying lands available for disposal (Appendix C of the RMP) has not been reviewed or updated since 1984 when the plan was written to determine if disposal is still in the public's best interest; for example, the east end of Grand County has experienced rapid urbanization and an increasing shift from a ranching- and forest products-dominated economy to a tourism- and recreation-based economy; this suggests that this and other plan decisions that establish resource condition objectives and allocations may need review.

No questions were identified in the RMP Preparation Plan.

4.20 TRANSPORTATION FACILITIES AND ACCESS

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The current management direction has provided for some designation and restrictions to travel on BLM public lands. The 1988 OHV implementation plan was put into effect to protect resources and to enhance visitor experiences in several areas. However, due to diminishing budgets, lack of manpower, and increases in overall visitation and motorized travel, these areas have been neglected and their designations not enforced to the level that is required. With future comprehensive travel management, planning must account for providing appropriate and desirable access to public lands.

Through the 1984 RMP and associated documents, several areas were identified prioritizing areas to gain access for public benefit. While some areas now have public access, several still remain inaccessible to the public. These areas should remain as objectives for gaining public access, and several additional areas should be added. Additional areas not identified in the 1984 RMP that would provide public access include North Strawberry, Reed Creek/Mount Chauncey, Ute Bill Creek, Sheriff Creek, Pole Mountain, and Red Mountain.

4.21 RENEWABLE ENERGY

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Current management direction has been adequate to allow for authorization of renewable resources. There has not been a demand for these authorizations in the KFO.

4.22 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

Current management direction for the two designated ACECs has been sufficient to protect the identified resource values associated with those areas. However, the BLM will need to consider additional management prescriptions to manage the increased visitation to the Kremmling Cretaceous Ammonite ACEC.

During the RMP revision scoping process, the BLM received over 20 external ACEC nominations from the public. The BLM is in the process of considering whether these nominations meet the relevance and importance criteria. As part of this process, the BLM is also considering internal nominations. The ACEC report will analyze whether these proposals meet the ACEC criteria. If so, they will be analyzed in the RMP/EIS.

The 2001 KFO RMP Evaluation Report found that both ACECs were in satisfactory condition and identified a need to keep a monitoring log for ACECs.

4.23 WILDERNESS STUDY AREAS

A. Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

The current management of the three WSAs in the KFO has been adequate to protect the wilderness characteristics of those areas. However, increased recreation uses have created some problem areas around the Troublesome WSA which have begun to threaten wilderness characteristics. Increased monitoring with recreation and law enforcement staff may help to alleviate some of these problems.

The revised RMP will need to address this issue through route designations and travel management decisions for these areas in order to continue to protect the wilderness characteristics of the WSAs.

Additionally, the revised RMP will need to address BLM guidance, which requires that all WSAs be managed as VRM Class I areas.

Since none the WSAs have been formally withdrawn from mineral entry as identified in the 1984 RMP, the potential for mineral entry in the all the WSAs could further threaten wilderness characteristics. No new leases are allowed under Interim Management Protection guidelines. Pre-FLPMA leases are allowed, but any development must comply with the nonimpairment criteria or must prevent unnecessary or undue degradation. The RMP revision gives the KFO the opportunity to review mineral entry status.

4.24 WILD AND SCENIC RIVERS

Refer to the WSR Eligibility Report for the GSFO and KFO on the Internet at http://www.blm.gov/rmp/co/kfo-gsfo/.

4.25 BACKCOUNTRY BYWAYS/NATIONAL TRAILS

The BLM is a member on the Colorado National Scenic Byway Committee and will continue to work with this group on the interpretive plan and will continue to work with this committee for implementation.

CHAPTER 5
CONSISTENCY/COORDINATION WITH OTHER PLANS

5.1 COUNTY/CITY PLANS

Larimer County - Guidelines for Revegetation of Disturbed Areas

Grand County - Erosion and Sediment Control for Construction Activities Guidance Handbook, 2005

5.2 STATE AGENCY PLANS

Colorado Division of Wildlife Strategic Plan

Middle Park Habitat Partnership Plan

North Park Habitat Partnership Plan

Greater Sage-grouse Conservation Plan, Middle Park, Colorado

North Park Greater Sage-grouse Conservation Plan

Northern Eagle/Southern Routt Greater Sage-grouse Conservation Plan

Colorado Division of Wildlife Data Analysis Unit Plans

Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats

Greater Sage-grouse Comprehensive Conservation Strategy

North American Mule Deer Conservation Plan

Mule Deer Conservation: Issues and Management Strategies

5.3 OTHER FEDERAL AGENCY PLANS

Arapaho National Wildlife Refuge Comprehensive Conservation Plan

BLM National Sage-grouse Strategy

5.4 COOPERATING AGENCIES

A *Cooperating Agency* is any federal, state, or local government agency or Indian tribe that enters into a formal agreement with the lead federal agency to assist in the

development of an environmental analysis. On November 30, 2006, the BLM mailed letters to local, state, federal, and tribal representatives inviting them to participate as cooperating agencies for the Glenwood Springs and Kremmling Field Offices RMP (**Table 5-1**). The status of each agency or tribe as of July 5, 2007 is provided below.

Table 5-1
Cooperating Agency Participation

Agency	Accepted	Declined	Did not Respond
Garfield County Board of County Commissioners	X		
Eagle County Board of County Commissioners	X		
Pitkin County Board of County Commissioners	X		
Routt County Board of County Commissioners		X	
Mesa County Board of County Commissioners	X	pending	
Grand County Board of County Commissioners	X		
Jackson County Board of County Commissioners	X		
Summit County Board of County Commissioners			X
Larimer County Board of County Commissioners			X
Town of New Castle	X		
Town of Rifle	X		
Town of Parachute	X		
Town of Silt	X		
Town of Gypsum	X		
Town of Eagle	X		
City of Glenwood Springs	X		
Town of Carbondale	X		
Town of Basalt	X		
Town of Kremmling	X		
Town of Hot Sulfur Springs	X		
Town of Granby	X		
Town of Walden		X	
Colorado Department of Natural Resources	X		
USFS – Arapaho/Roosevelt NF		X	
USFS – White River NF		X	
USFS – Medicine Bow/Routt NF		X	
NRCS – Kremmling Field Office		X	
NRCS – Walden Field Office		X	
Southern Ute Indian Tribe			X
Ute Mountain Indian Tribe			X
Eastern Shoshone Tribe			X
Northern Arapaho Tribe			X
Northern Ute Indian Tribe			X
Arapaho National Wildlife Refuge		X	
US Fish and Wildlife Service	X		

CHAPTER 6
SPECIFIC MANDATES AND AUTHORITIES

The foundation of public lands management is in the mandates and authorities provided in laws, regulations, and executive orders. BLM's planning process (as described in 43 CFR 1600) is authorized and mandated through two important laws: the Federal Land Policy and Management Act of 1976 and the National Environmental Policy Act of 1969. In addition to these acts, several other acts, IMs, IBs, manuals, and handbooks give direction and authority to the BLM. The following are some of the documents that direct the management of public lands and resources.

6.1 LAWS, REGULATIONS, AND ORDERS

- American Indian Religious Freedom Act (49 USC 47125 *et seq.*)
- Appropriations Act of 1952, McCarran Amendment
- Archaeological Resources Protection Act of 1979, as amended (16 USC 470)
- Classification of Multiple Use Act of September 1964, in accordance with 43 CFR 2400
- Clean Air Act, as amended (42 USC 7418)
- Colorado River Basin Salinity Control Act of 1974
- Endangered Species Act of 1973, as amended (16 USC 1531 *et seq.*)
- Federal Cave Resources Protection Act of 1988 (16 USC 4301 *et seq.*)
- Federal Land Policy and Management Act of 1976
- Federal Water Pollution Control Act (commonly referred to as the Clean Water Act), as amended (33 USC 1251-1387)
- Fish and Wildlife Coordination Act (16 USC 661 *et seq.*)
- Healthy Forests Restoration Act of 2003
- Historic Sites Act of 1935 (16 USC 461)

- Migratory Bird Conservation Act of 1979 (16 USC 715)
- Mining and Mineral Policy Act of 1970 (30 USC 181 *et seq.*)
- National Historic Preservation Act, as amended (16 USC 470)
- Onshore Oil and Gas Leasing Reform Act of 1987 (30 USC 181 *et seq.*)
- Public Rangelands Improvement Act of 1978 (43 USC 869 *et seq.*)
- Recreation and Public Purposes Act of 1926, as amended (43 USC 869 *et seq.*)
- Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 *et seq.*)
- Taylor Grazing Act of 1934 (43 USC 315)
- Water Resources Development Act of 1974
- Wild and Scenic Rivers Act, as amended (16 USC 1271 *et seq.*)
- Wilderness Act, as amended (16 USC 1131 *et seq.*)
- Executive Order 11288 (water quality management and pollution abatement plans)
- Executive Order 11644 (Use of Off-Road Vehicles on the Public Lands)
- Executive Order 11738 (Enforce the Clean Air Act and the Clean Water Act in the Procurement of Goods, Materials, and Services)
- Executive Order 11987 (Exotic Flora and Fauna)
- Executive Order 13007 (Indian Sacred Sites)
- Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments)
- National Ambient Air Quality Standards (40 CFR 50.4-50.12)

6.2 INSTRUCTION MEMORANDUMS, INFORMATION BULLETINS, MANUAL SECTIONS, HANDBOOKS, AND TECHNICAL NOTES

- IM 78-410 (Protection of Wetlands and Riparian Areas)
- IM 78-523 (Compliance with BLM Interim Floodplain Management Procedures)
- IM 87-261 (Implementation of the Riparian Area Management Policy)
- IM 99-085 (Federal Multi-Agency Source Water Agreement)
- IM 99-123 (Reporting to the Colorado River Salinity Control Forum)
- IM 2002-174 (Oil and Gas Leasing Stipulations)
- IM 2003-127 (Integration of the Energy Policy and Conservation Act Inventory Results into Land Use Planning and Energy use Authorizations)
- IM 2003-158 (MOU between BLM and the Animal and Plant Health Inspection Service Addressing the Management of Grasshoppers and Mormon Crickets)

- IM 2003-226 (Fire Program Analysis System – Development of Fire Management Objectives)
- IM 2004-005 (Clarification of OHV Designations and Travel Management in the BLM Land Use Planning Process)
- IM 2005-006 (Solar Energy Development Policy)
- IM 2005-008 (Black-tailed, White-tailed, and Gunnison Prairie Dog Conservation Update)
- Colorado IM 2007-020 (Comprehensive Travel Management Planning and OHV Designations)
- IB 98-116 (Clean Water Action)
- IB 2002-101 (Cultural Resource Information)
- IB 2003-074 (Sample Filing Plan for Land Use Planning Records)
- IB 2003-113 (The Manager's Role in the Land Use Planning Process)
- BLM-M-1601 (Land Use Planning)
- BLM-M-1613 (Areas of Critical Environmental Concern)
- BLM-M-4180 (Rangeland Health Standards)
- BLM-M-6800 (Special Status Species Management)
- BLM-M-7150 (Provides guidance in the conduct of maintenance of water utilization and development, water quality, water yield and timing, and water rights)
- BLM-M-8100 (Cultural Resource Management)
- BLM-M-8270 (Paleontological Resource Management)
- BLM-M-8340 (OHV Management)
- BLM-H-1601 (Land Use Planning)
- BLM-H-1790 (NEPA Handbook)
- BLM-H-2200 (Land Exchanges)
- BLM-H-4180-1 (Wilderness Inventory and Study Procedures)
- BLM-H-8410-1 (Visual Resource Inventory)
- BLM-H-9214-1 (Prescribed Fire Management)
- Technical Notes 346: Erosion condition classification system
- Technical Notes 364: 1980-82 salinity status report: results of Bureau of Land Management studies on public lands in the Upper Colorado River Basin
- Technical Notes 369: Considerations in rangeland watershed monitoring
- Technical Notes 373: Diffuse-source salinity mancos shale terrain

- Technical Notes 405: A framework for analyzing the hydrologic conditions of watersheds

6.3 APPLICABLE COLORADO STATE LAWS AND REGULATIONS

Water Quality- Colo. Dept of Public Health and Environment, Water Quality Control Commission

- Regulation No. 39 Colorado River Salinity Standards. Adopted May 6, 1980, amended 1982, 1997
- Regulation No. 42 Site Specific Water Quality Classifications and Standards For Groundwater
- Colorado Water Quality Control Act
- Regulation No. 41 The Basic Standards for Groundwater
- Regulation No. 93- Section 303(d) List Water Quality Limited Segments Requiring TMDLs. adopted 3/24/2006
- Regulation No. 94- Colorado's Monitoring and Evaluation List, adopted 3/2006
- Regulation 31- The Basic Standards and Methodologies for Surface Water (amended 8/8/05, effective 12/31/05 and 12/31/07)
- Regulation 33 - Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River (Planning Region 12) and tables (amended 1/9/06, effective 3/2/06)
- Regulation 38 - Classifications and Numeric Standards South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin and tables (amended 8/14/06, effective 9/30/06))
- Primary Drinking Water Regulations - 5 CCR 1003-1 (amended 1/19/05, effective 3/30/05)

Water Rights- Colorado Division of Water Resources

- Colorado Revised Statues- Title 37- Water and Irrigation

6.4 MEMORANDA AND AGREEMENTS

- Master MOU with USFWS dated December 1986
- The rangeland programmatic memorandum of agreement among BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers
- The federal coal management programmatic memorandum of agreement among BLM, Office of Surface Mining, DOI, USGS, and the Advisory Council on Historic Preservation
- Interagency MOU between the BLM and USDA in 1995 (60F26045-48, 5/16/1995)

CHAPTER 7
GLOSSARY

Activity plan. A type of implementation plan (see *Implementation plan*); an activity plan usually describes multiple projects and applies best management practices to meet land use plan objectives. Examples of activity plans include interdisciplinary management plans, habitat management plans, recreation area management plans, and grazing plans.

Actual use. The amount of animal unit months consumed by livestock based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

Air pollution. The contamination of the atmosphere by any toxic or radioactive gases and particulate matter as a result of human activity.

Allotment. An area of land in which one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federally managed, state-owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Amendment. The process for considering or making changes in the terms, conditions, and decisions of approved resource management plans or management framework plans. Usually only one or two issues are considered that involve only a portion of the planning area.

Analysis of the management situation (AMS). Assessment of the current management direction. It includes a consolidation of existing data needed to analyze and resolve identified issues, a description of current BLM management guidance, and a discussion of existing problems and opportunities for solving them.

Areas of critical environmental concern (ACEC). Areas within the public lands where special management attention is required (when such areas are developed or used or where no development 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 (from H-6310-1, Wilderness Inventory and Study Procedures).

Assets. Term utilized to describe roads, primitive roads, and trails that comprise the transportation system. Also the general term utilized to describe all BLM constructed "Assets" contained within the Facility Asset Management System.

Atmospheric deposition. Air pollution produced when acid chemicals are incorporated into rain, snow, fog or mist and fall to the earth. Sometimes referred to as "acid rain" and comes from sulfur oxides and nitrogen oxides, products of burning coal and other fuels and from certain industrial processes. If the acid chemicals in the air are blown into areas where the weather is wet, the acids can fall to earth in the rain, snow, fog, or mist. In areas where the weather is dry, the acid chemicals may become incorporated into dust or smoke.

AUM (animal unit month). The amount of forage needed by a grazing animal for one month. The animal is defined as one mature 1,000-pound cow and her suckling calf.

Back country byways. Vehicle routes that traverse scenic corridors using secondary or backcountry road systems. National backcountry byways are designated by the type of road and vehicle needed to travel the byway.

Beneficial outcomes. Also referenced as "recreation benefits"; improved conditions, maintenance of desired conditions, prevention of worse conditions, and the realization of desired experiences.

Big game. Indigenous, ungulate (hoofed) wildlife species that are hunted, such as elk, deer, bison, bighorn sheep, and pronghorn antelope.

Candidate species. Taxa for which the US Fish and Wildlife Service has sufficient information on their status and threats to propose the species for listing as endangered or threatened under the Endangered Species Act, but for which issuance of a proposed rule is currently precluded by higher priority listing actions. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the Federal Register (from M6840, Special Status Species Manual).

Casual use. Activities that involve practices that do not ordinarily disturb or damage the public lands, resources, or improvements and, therefore, do not require a right-of-way grant or temporary use permit (43 CFR 2800). Also, any short-term noncommercial activity that does not damage or disturb the public lands, their resources, or improvements and that is not prohibited by closure of the lands to such

activities (43 CFR 2920). Casual use generally includes collecting geochemical, rock, soil, or mineral specimens using hand tools, hand panning, and nonmotorized sluicing. It also generally includes use of metal detectors, gold spears, and other battery-operated devices for sensing the presence of minerals, and hand battery-operated dry washers. Casual use does not include use of mechanized earth-moving equipment, truck-mounted drilling equipment, suction dredges, motorized vehicles in areas designated as closed to off-road vehicles, chemicals, or explosives. It also does not include occupancy or operations where the cumulative effects of the activities result in more than negligible disturbance.

Clean Air Act (CAA) of 1963 and amendments. Federal legislation governing air pollution control.

Closed Area. An area where off-highway vehicle use is prohibited. Use of off-highway vehicles in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer.

Collaborative partnerships. Refers to people working together, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks.

Community recreation-tourism market. A community or communities dependent on public lands recreation or related tourism use, growth, or development. Major investments in facilities and visitor assistance are authorized within SRMAs where the BLM's strategy is to target demonstrated community recreation-tourism market demand. Here, recreation management actions are geared toward meeting primary recreation-tourism market demand for specific activity, experience, and benefit opportunities. These opportunities are produced through maintenance of prescribed natural resource or community setting character and by structuring and implementing management, marketing, monitoring, and administrative actions accordingly.

Comprehensive Travel Management. The proactive interdisciplinary planning; on-the-ground management and administration of travel networks (both motorized and non-motorized) to ensure public access, natural resources, and regulatory needs are considered. It consists of inventory, planning, designation, implementation, education, enforcement, monitoring, easement acquisition, mapping and signing, and other measures necessary to provide access to public lands for a wide variety of uses (including uses for recreational, traditional, casual, agricultural, commercial, educational, and other purposes).

Condition class (fire regimes). Fire regime condition classes are a measure describing the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components, such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire suppression, timber harvesting,

livestock grazing, introduction and establishment of exotic plant species, introduced insects or disease, or other management activities.

Conditions of approval. Conditions or provisions (requirements) under which an application for a permit to drill or a sundry notice is approved.

Conservation agreement. A formal signed agreement between the US Fish and Wildlife Service or National Oceanographic and Atmospheric Administration-Fisheries and other parties that implement specific actions, activities, or programs designed to eliminate or reduce threats to, or otherwise improve the status of, a species. Conservation agreements can be developed at a state, regional, or national level and generally include multiple agencies at both the state and federal level, as well as tribes. Depending on the types of commitments the BLM makes in a conservation agreement and the level of signatory authority, plan revisions or amendments may be required before the conservation agreement is signed or subsequently in order to implement the conservation agreement.

Conservation strategy. A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM sensitive species or that have been determined by the US Fish and Wildlife Service or National Oceanographic and Atmospheric Administration-Fisheries to be federal candidates under the Endangered Species Act.

Council on Environmental Quality (CEQ). An advisory council to the President of the US established by the National Environmental Policy Act of 1969. It reviews federal programs to analyze and interpret environmental trends and information.

Critical habitat. An area occupied by a threatened or endangered species "on which are found those physical and biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection."

Deferred rotation. Rotation grazing with regard to deferring pastures beyond the growing season, if they were used early the prior year, or that have been identified as needing deferment for resource reasons.

Designated roads and trails. Specific roads and trails identified by the BLM (or other agency) where some type of motorized vehicle use is appropriate and allowed, either seasonally or year-long (from H-1601-1, BLM Land Use Planning Handbook).

Desired outcomes. A type of land use plan decision expressed as a goal or objective.

Destination recreation-tourism market. National or regional recreation-tourism visitors and other constituents who value public lands as recreation-tourism destinations. Major investments in facilities and visitor assistance are authorized within SRMAs where the BLM's strategy is to target demonstrated destination recreation-tourism market demand. Here, recreation management actions are geared toward meeting primary recreation-tourism market demand for specific activity, experience, and benefit opportunities. These opportunities are produced through maintenance of prescribed natural resource setting character and by structuring and implementing management, marketing, monitoring, and administrative actions accordingly.

Disposal. Transfer of public land out of federal ownership to another party through sale, exchange, Recreation and Public Purposes Act, Desert Land Entry or other land law statutes.

Easement. A right afforded a person or agency to make limited use of another's real property for access or other purposes.

Eligibility. Qualification of a river for inclusion into the National Wild and Scenic Rivers System through the professional judgment that it is free flowing and, with its adjacent land area, possesses at least one river-related value considered to be outstandingly remarkable (from M-8351, BLM WSR Policy and Program).

Endangered species. Any species that is in danger of extinction throughout all or a significant portion of its range (from M6840, Special Status Species Manual).

Environmental impact statement (EIS). A detailed statement prepared by the responsible official in which a major federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and effects are analyzed (from BLM National Management Strategy for OHV Use on Public Lands).

Evaluation (plan evaluation). The process of reviewing the land use plan and the periodic plan monitoring reports to determine whether the land use plan decisions and National Environmental Policy Act analysis are still valid and whether the plan is being implemented.

Extensive recreation management area (ERMA). A public lands unit identified in land use plans containing all acreage not identified as a SRMA. Recreation management actions within an ERMA are limited to only those of a custodial nature.

Federal Land Policy and Management Act of 1976 (FLPMA). Public Law 94-579, October 21, 1976, often referred to as the BLM's "Organic Act," which provides most of the BLM's legislated authority, direction policy, and basic management guidance (from BLM National Management Strategy for OHV Use on Public Lands).

Fire suppression. All work activities connected with fire extinguishing operations, beginning with discovery of a fire and continuing until the fire is completely out.

Fluid minerals. Oil, gas, coal bed natural gas, and geothermal resources.

Functioning at risk. Riparian-wetland areas that are in functional condition, but that have an existing soil, water, or vegetation attribute that makes them susceptible to degradation.

Geographic information system. A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and display a potentially wide array of geospatial information.

Goal. A broad statement of a desired outcome; usually not quantifiable and may not have established timeframes for achievement.

Grazing plan. A concisely written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment. A grazing plan is prepared in consultation with the permittee(s), lessee(s), and other affected interests. Livestock grazing is considered in relation to other uses of the range and to renewable resources, such as watershed, vegetation, and wildlife. A grazing plan establishes seasons of use, the number of livestock to be permitted, the range improvements needed, and the grazing system.

Grazing preference. The total number of animal unit months on public land apportioned and attached to base property owned or controlled by a lessee.

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

Habitat. An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle.

Herd management area. Public land under the jurisdiction of the BLM that has been designated for special management emphasizing the maintenance of an established wild horse or burro herd.

Implementation decisions. Decisions that take action to implement land use planning; generally appealable to Interior Board of Land Appeals under 43 CFR 4.410.

Implementation plan. An area or site-specific plan written to implement decisions made in a land use plan. Implementation plans include both activity plans and project plans.

Intermittent stream. An intermittent stream is a stream that flows only at certain times of the year when it receives water from springs or from some surface sources such as melting snow in mountainous areas. During the dry season and throughout minor drought periods, these streams will not exhibit flow. Geomorphological characteristics are not well defined and are often inconspicuous. In the absence of external limiting factors, such as pollution and thermal modifications, species are scarce and adapted to the wet and dry conditions of the fluctuating water level.

K factor. A soil erodibility factor used in the universal soil loss equation that is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff. Estimation of the factor takes several soil parameters into account, including soil texture, percent of sand greater than 0.10 millimeter, soil organic matter content, soil structure, soil permeability, clay mineralogy, and coarse fragments. K factor values range from .02 to .64, the greater values indicating the highest susceptibilities to erosion.

Late Season. Late summer or fall grazing.

Land classification. When, under criteria of 43 CFR 2400, a tract of land has the potential for retention for multiple use management or for some form of disposal or for more than one form of disposal. The relative scarcity of the values involved and the availability of alternative means and sites for realization of those values will be considered. Long-term public benefits will be weighed against more immediate or local benefits. The tract will then be classified in a manner that will best promote the public interest.

Land tenure adjustments. Ownership or jurisdictional changes. To improve the manageability of the BLM lands and their usefulness to the public, the BLM has numerous authorities for repositioning lands into a more consolidated pattern, disposing of lands, and entering into cooperative management agreements. These land pattern improvements are completed primarily through the use of land exchanges but also through land sales, through jurisdictional transfers to other agencies, and through the use of cooperative management agreements and leases.

Land use allocation. The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions (from H-1601-1, BLM Land Use Planning Handbook).

Land use plan. A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; 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 both RMPs and management framework plans (from H-1601-1, BLM Land Use Planning Handbook).

Land use plan boundary. The geographic extent of a resource management plan or management framework plans.

Land use plan decision. Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to Interior Board of Land Appeals.

Lease. Section 302 of the Federal Land Policy and Management Act of 1976 provides the BLM's authority to issue leases for the use, occupancy, and development of public lands. Leases are issued for purposes such as a commercial filming, advertising displays, commercial or noncommercial croplands, apiaries, livestock holding or feeding areas not related to grazing permits and leases, native or introduced species harvesting, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, ski resorts, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and nonirrigation facilities. The regulations establishing procedures for processing these leases and permits are found in 43 Code of Federal Regulations 2920.

Lek. An assembly area where birds, especially sage-grouse, carry on display and courtship behavior.

Limited Area. An area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type but can generally be accommodated within the following categories: Numbers of vehicles; types of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions.

Locatable minerals. Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

LU project lands. Privately owned submarginal farmlands incapable of producing sufficient income to support the family of a farm owner and purchased under Title III of the Bankhead-Jones Farm Tenant Act of July 22, 1937. These acquired lands became known as land utilization projects and were subsequently transferred from jurisdiction of the USDA to the US Department of the Interior. They are now administered by the BLM.

Mineral. Any naturally formed inorganic material, solid or fluid inorganic substance that can be extracted from the earth, any of various naturally occurring homogeneous substances (as stone, coal, salt, sulfur, sand, petroleum, water, or natural gas) obtained usually from the ground. Under federal laws, considered as locatable (subject to the general mining laws), leasable (subject to the Mineral Leasing Act of 1920), and salable (subject to the Materials Act of 1947).

Mineral entry. The filing of a claim on public land to obtain the right to any locatable minerals it may contain.

Mineral estate. The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

Mineral materials. Materials such as sand and gravel and common varieties of stone, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws but that can be acquired under the Materials Act of 1947, as amended.

Mining claim. A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

Monitoring (plan monitoring). The process of tracking the implementation of land use plan decisions and collecting and assessing data necessary to evaluate the effectiveness of land use planning decisions.

Multiple use. The management of the public lands and their various resource values so that they are used in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output (FLPMA) (from M6840, Special Status Species Manual).

National Wild and Scenic Rivers System. A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are

preserved in a free-flowing condition. The system consists of three types of streams: (1) recreation—rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past; (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads; and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

Nonfunctional Condition. 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.

Objective. A description of a desired outcome for a resource. Objectives can be quantified and measured and, where possible, have established timeframes for achievement.

Off-highway vehicle (off-road vehicle). Any motorized vehicle capable of, or designated for travel on or immediately over land, water or other natural terrain, excluding: (1) any non-amphibious 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 when used for national defense.

Open Area. An area where all types of vehicle use is permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set forth in 43 CFR 8341 and 8342.

Outstandingly Remarkable Values. Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values...." Other similar values that may be considered include ecological, biological, or botanical.

Ozone. A faint blue gas produced in the atmosphere from chemical reactions of burning coal, gasoline, and other fuels and chemicals found in products such as solvents, paints, and hairsprays.

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

Permit long. Grazing for the duration of the permitted time with care taken not to overuse the resource.

Permitted use. The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and expressed

in animal unit months (43 CFR § 4100.0-5) (from H-4180-1, BLM Rangeland Health Standards Manual).

Prevention of significant deterioration. An air pollution permitting program intended to ensure that air quality does not diminish in attainment areas.

Primitive and unconfined recreation. Nonmotorized, nonmechanized (except as provided by law), and undeveloped types of recreational activities. Bicycles are considered mechanical transport, so their use is not considered primitive and unconfined recreation (from H-6310-1, Wilderness Inventory and Study Procedures).

Primitive Road. A linear route managed for use by four-wheel drive or high-clearance vehicles. Primitive roads do not normally meet any BLM road design standards.

Proper Functioning Condition for Lentic Areas. A riparian-wetland areas are functioning properly when adequate vegetation, landform, or debris is present to: dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality; filter sediment and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize islands and shoreline features against cutting action; restrict water percolation; develop diverse ponding characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterbird breeding, and other uses; and support greater biodiversity.

Proper Functioning Condition for Lotic Areas. A riparian-wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to:

- dissipate stream energy associated with high waterflow, thereby reducing erosion and improving water quality;
- filter sediment, capture bedload, and aid floodplain development;
- improve flood-water retention and ground-water recharge;
- develop root masses that stabilize streambanks against cutting action;
- develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses;
- support greater biodiversity.

Public land. Land or interest in land owned by the US and administered by the Secretary of the Interior through the BLM without regard to how the US acquired ownership, except lands located on the Outer Continental Shelf and land held for the benefit of Indians, Aleuts, and Eskimos (from H-1601-1, BLM Land Use Planning Handbook).

Reasonable foreseeable development scenario. The prediction of the type and amount of oil and gas activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

Recreation and Public Purposes (R&PP) Act (of 1926). Provides for the lease and sale of public lands determined valuable for public purposes. The objective of the R&PP Act is to meet the needs of state and local government agencies and nonprofit organizations by leasing or conveying public land required for recreation and public purpose uses. Examples of uses made of R&PP lands are parks and greenbelts, sanitary landfills, schools, religious facilities, and camps for youth groups. The act provides substantial cost-benefits for land acquisition and provides for recreation facilities or historical monuments at no cost.

Recreation experiences. Psychological outcomes realized either by recreation-tourism participants as a direct result of their on-site leisure engagements and recreation-tourism activity participation or by nonparticipating community residents as a result of their interaction with visitors and guests within their community or interaction with the BLM and other public and private recreation-tourism providers and their actions.

Recreation management zones. Subunits within a SRMA managed for distinctly different recreation products. Recreation products are composed of recreation opportunities, the natural resource and community settings within which they occur, and the administrative and service environment created by all affecting recreation-tourism providers, within which recreation participation occurs.

Recreation niche. The place or position within the strategically targeted recreation-tourism market for each SRMA that is most suitable (i.e., capable of producing certain specific kinds of recreation opportunities) and appropriate (i.e., most responsive to identified visitor or resident customers), given available supply and current demand, for the production of specific recreation opportunities and the sustainable maintenance of accompanying natural resource or community setting character.

Recreation opportunities. Favorable circumstances enabling visitors' engagement in a leisure activity to realize immediate psychological experiences and attain more lasting, value-added beneficial outcomes.

Recreation opportunity spectrum. One of the existing tools for classifying recreation environments (existing and desired) along a continuum, ranging from primitive, low-use, and inconspicuous administration to urban, high-use, and a highly visible administrative presence. This continuum recognizes variation among various components of any landscape's physical, social, and administrative attributes. Resulting descriptions of existing conditions and prescriptions of desired future conditions define recreation setting character.

Recreation setting character conditions. The distinguishing recreational qualities of any landscape, objectively defined along a continuum, ranging from primitive to urban landscapes, expressed in terms of the nature of the component parts of its physical, social, and administrative attributes. These recreational qualities can be both classified and mapped. This classification and mapping process should be based on variation that either exists (for example, setting descriptions) or is desired (for example, setting prescriptions) among component parts of the various physical, social, and administrative attributes of any landscape. The recreation opportunity spectrum is one of the tools for doing this.

Recreation settings. The collective distinguishing attributes of landscapes that influence and sometimes actually determine what kinds of recreation opportunities are produced.

Recreation-tourism market. Recreation and tourism visitors and local residents who affect local governments and private sector businesses and the communities or other places where these customers originate (local, regional, national, or international). Based on analysis of supply and demand, land use plans strategically identify primary recreation-tourism markets for each special recreation management area—destination, community, or undeveloped.

Resource management plan (RMP). A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives, and actions to be achieved.

Rest rotation. Gazing rotation that rests pastures that have been grazed early the prior year or that have been identified as needing rest for resource reasons.

Revision. The process of completely rewriting the land use plan due to changes in the planning area affecting major portions of the plan or the entire plan.

Right-of-way (ROW). Public lands authorized to be used or occupied for specific purposes pursuant to a right-of-way grant, which are in the public interest and which require rights-of-way over, on, under, or through such lands.

Riparian area. A form of wetland transition between permanently saturated wetlands and upland areas. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

Road. A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

Rock art. Petroglyphs (carvings) or pictographs (painting) used by native persons to depict their history and culture.

Rotation. Grazing rotation between pastures in the allotment for the permitted time.

Routes. Multiple roads, trails and primitive roads; a group or set of roads, trails, and primitive roads that represents less than 100 percent of the BLM transportation system. Generically, components of the transportation system are described as "routes."

Scenic byways. Highway routes that have roadsides or corridors of special aesthetic, cultural, or historical value. An essential part of the highway is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic features, or other natural elements.

Season of use. The time during which livestock grazing is permitted on a given range area, as specified in the grazing lease.

Setting character. The condition of any recreation system, objectively defined along a continuum, ranging from primitive to urban in terms of variation of its component physical, social, and administrative attributes.

Special recreation management area (SRMA). A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities. Both land use plan decisions and subsequent implementing actions for recreation in each SRMA are geared to a strategically identified primary market—destination, community, or undeveloped.

Special status species. Includes proposed species, listed species, and candidate species under the Endangered Species Act; also, state-listed species and BLM State Director-designated sensitive species (see BLM Manual 6840, Special Status Species Policy).

Split season. Removing livestock from the allotment and returning them later in the year within the permitted time.

Standard. A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., land health standards). To be expressed as a desired outcome (goal).

State implementation plan. A detailed description of the programs a state will use to carry out its responsibilities under the Clean Air Act. State implementation plans are collections of the regulations used by a state to reduce air pollution.

Threatened species. Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (from M6840, Special Status Species Manual).

Total maximum daily load. 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.

Traditional cultural property. a property that derives significance from traditional values associated with it by a social or cultural group, such as an Indian tribe or local community. A traditional cultural property may qualify for the National Register of Historic Places if it meets the criteria and criteria exceptions at 36 CFR 60.4. See National Register Bulletin 38.

Transportation Linear Features. "Linear features" represents the broadest category of physical disturbance (planned and unplanned) on BLM land. Transportation related linear features include engineered roads and trails, as well as user-defined, non-engineered roads and trails created as a result of the public use of BLM land. Linear features may include roads and trails identified for closure or removal as well as those that make up the BLM's defined transportation system.

Transportation System. The sum of the BLM's recognized inventory of linear features (roads, primitive roads, and trails) formally recognized, designated, and approved as part of the BLM's transportation system.

Travel Management Areas. Polygons or delineated areas where a rational approach has been taken to classify areas open, closed or limited, and have identified and/or designated a network of roads, trails, ways, and other routes that provide for public access and travel across the planning area. All designated travel routes within travel management areas should have a clearly identified need and purpose as well as clearly defined activity types, modes of travel, and seasons or timeframes for allowable access or other limitations. (BLM Manual H1601-1 Land Use Planning Handbook).

Undeveloped recreation-tourism market. National, regional, or local recreation-tourism visitors, communities, or other constituents who value public lands for the distinctive kinds of dispersed recreation produced by the vast size and largely open, undeveloped character of their recreation settings. Major investments in facilities are excluded within special recreation management areas where the BLM's strategy is to target demonstrated undeveloped recreation-tourism market demand. Here, recreation management actions are geared toward meeting primary recreation-tourism market demand to sustain distinctive recreation setting characteristics; however, major investments in visitor services are authorized both to sustain those

distinctive setting characteristics and to maintain visitor freedom to choose where to go and what to do—all in response to demonstrated demand for undeveloped recreation.

Valid existing rights. Any lease established (and valid) before a new authorization, change in land designation, or in regulation.

Visibility (air quality). A measure of the ability to see and identify objects at different distances.

Visitor day. Twelve visitor hours that may be aggregated by one or more persons in single or multiple visits.

Visitor use. Visitor use of a resource for inspiration, stimulation, solitude, relaxation, education, pleasure, or satisfaction.

Visual resource management classes. Define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. Categories assigned to public lands are based on scenic quality, sensitivity level, and distance zones. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape (from H-1601-1, BLM Land Use Planning Handbook).

The four classes are described below:

- **Class I** provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar areas where landscape modification activities should be restricted.
- **Class II** areas are those areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.
- **Class III** includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- **Class IV** applies to areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

Volatile organic compounds. Chemicals that produce vapors readily at room temperature and at normal atmospheric pressure. Volatile organic compounds include gasoline, industrial chemicals such as benzene, solvents such as toluene and xylene, and tetrachloroethylene (perchloroethylene, the principal dry cleaning solvent).

Wild, scenic, or recreational. The term used for what is traditionally shortened to wild and scenic rivers. Designated river segments are classified as wild, scenic, or recreational but cannot overlap (from M-8351, BLM WSR Policy and Program).

Wild river. Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and unpolluted. These represent vestiges of primitive America.

Scenic river. A river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

Recreational river. Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Way. Roadlike feature used by vehicles having four or more wheels but not declared a road by the owner and which receives no maintenance to guarantee regular and continuous use.

Wild and scenic study river. Rivers identified in Section 5 of the Wild and Scenic Rivers Act for study as potential additions to the National Wild and Scenic Rivers System. The rivers will be studied under the provisions of Section 4 of the act (from M-8351, BLM WSR Policy and Program).

Wilderness. A congressionally designated area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value. The definition contained in Section 2(c) of the Wilderness Act of 1964 (78 Stat. 891) (from H-6310-1, Wilderness Inventory and Study Procedures).

Wilderness characteristics. Wilderness characteristics include size, the appearance of naturalness, outstanding opportunities for solitude, or a primitive and unconfined type of recreation. They may also include ecological, geological, or other features of scientific, educational, scenic, or historical value. However Section 2(c) of the Wilderness Act of 1964 has been updated by IM-2003-195, dated June 20, 2003. Indicators of an area's naturalness include the extent of landscape modifications, the presence of native vegetation communities, and the connectivity of habitats. Outstanding opportunities for solitude or primitive and unconfined types of recreation may be experienced when the sights, sounds, and evidence of other people are rare or infrequent, in locations where visitors can be isolated, alone or secluded

from others, where the use of the area is through nonmotorized, nonmechanical means, and where no or minimal developed recreation facilities are encountered.

Wilderness study area. A designation made through the land use planning process of a roadless area found to have wilderness characteristics, as described in Section 2(c) of the Wilderness Act of 1964 (from H-6310-1, Wilderness Inventory and Study Procedures).

Wildland fire. Any fire, regardless of ignition source, that is burning outside of a prescribed fire and any fire burning on public lands or threatening public land resources, where no fire prescription standards have been prepared (from H-1742-1, BLM Emergency Fire Rehabilitation Handbook).

CHAPTER 8
LIST OF PREPARERS

Table 8-1
List of Preparers

Name	Discipline
Bureau of Land Management	
Joe Stout	Planning and Environmental Coordinator
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John Monkouski	Recreation Planner
Bernice Sterin	Recreation Planner
Kelly Hodgson	Natural Resource Specialist
Bill Wyatt	Archeologist
Frank Rupp	Archeologist
Paula Belcher	Hydrologist
Megan McGuire	Wildlife Biologist
Chuck Cesar	Wildlife Biologist
Rich Rosene	Forester
Richard Johnson	Rangeland Management Specialist
Karl Waller	Ecologist
Pete Torma	Rangeland Management Specialist
Harley Armstrong	Paleontologist
John Morrone	Geologist
Contractor	
Cindy Schad	Word Processing, Formatting
Randolph Varney	Technical Editing

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APPENDIX A
UPDATED DECISION GUIDANCE
(BLM HANDBOOK H-1601-1, APPENDIX C)

RESOURCES

Air

Identify desired outcomes and area-wide criteria or restrictions in cooperation with the appropriate air quality regulatory agency that apply to direct or authorized emission-generating activities, including the Clean Air Act's requirements for compliance with:

1. Applicable National Ambient Air Quality Standards (Section 109)
2. State Implementation Plans (Section 110)
3. Control of Pollution from Federal Facilities (Section 118)
4. Prevention of Significant Deterioration, including visibility impacts to Mandatory Federal Class I Areas (Section 160 et seq.)
5. Conformity Analyses and Determinations (Section 176(c))

Soil and Water

- Identify desired outcomes (including standards or goals under the Clean Water Act).
- Identify watersheds or specific soils that may need special protection from the standpoint of human health concerns, ecosystem health, or other public uses.
- For riparian areas, identify desired width/depth ratios, stream-bank conditions, channel substrate conditions and large woody material characteristics.
- Identify area-wide use restrictions or other protective measures to meet Tribal, state and local water quality requirements.

- Identify measures, including filling for water rights under applicable state or Federal permit procedures, to ensure water availability for multiple use management and functioning, healthy riparian and upland systems.

Vegetation

- Identify desired outcomes for vegetative resources, including the desired mix of vegetative types, structural stages and landscape and riparian functions; and provide for native plant, fish and wildlife habitats and livestock forage.
- Desired outcomes (goals and objectives) may be established at multiple scales.
- Identify areas of ecological importance and designate priority plant species and habitats, including special status species and populations of plant species recognized as significant for at least one factor such as density, diversity, size, public interest, remnant character, or age.
- Identify the actions and area-wide use restrictions needed to achieve desired vegetative conditions.
- NOTE: Reference materials for establishing desired outcomes for vegetative resources include:
    1. National Range and Pasture Handbook (1997): Natural Resources Conservation Service (USDA – NRCS) Methodology of Vegetation inventory, Monitoring, Analysis and Management of Grazing Lands.
    2. Interpreting Indicators of Rangeland Health: BLM Technical Reference 1734-6.
    3. Ecological Site Inventory: BLM Technical Reference 1734-7.
    4. Rangeland Health Standards: H-4180-1.
    5. Website examples of ecological site descriptions (use Internet Explorer): http://www.esis.sc.egov.usda.gov, http://www.nm.nrcs.usda.gov/technical/fotg/section-2/ESD.html, http://www.mt.nrcs.usda.gov/technical/ecs/range/ecolsites/
- In areas where Healthy Forests Restoration Act authorities are to be used:
    - Identify old growth forest stands or describe a process for identifying old growth forest stands in the land use plan based on the structure and composition characteristic of the forest type.
    - Provide management direction to maintain, or contribute toward the restoration of, the structure and composition of old growth forest stands in areas where these authorities will be used.
    - This management direction should consider the pre-fire exclusion old growth conditions characteristic of the forest type, taking into account the contribution of the stand to landscape fire adaptation

and watershed health, and retaining the large trees contributing to old growth structure.

Fish and Wildlife

- Designate priority species and habitats, in addition to special status species, for fish or wildlife species recognized as significant for at least one factor such as density, diversity, size, public interest, remnant character, or age.
- Identify desired outcomes using BLM strategic plans, state agency strategic plans, and other similar sources.
- Describe desired habitat conditions and/or population for major habitat types that support a wide variety of game, non-game, and migratory bird species; acknowledging the states' roles in managing fish and wildlife, working in close coordination with state wildlife agencies, and drawing on state comprehensive wildlife conservation strategies.
- Identify actions and area-wide use restrictions needed to achieve desired population and habitat conditions while maintaining a thriving natural ecological balance and multiple-use relationships

Special Status Species

- Identify desired outcomes, strategies, restoration opportunities, use restrictions and management actions to conserve and recover special status species.
- Desired outcomes may incorporate goals and objectives from recovery plans and conservation strategies or identify ecologically important areas or scarce, limited habitats.
- Goal and objectives may be species or habitat specific and can be established at multiple scales (i.e. fine, mid and broad) to fully understand the context of the larger landscape.
- Given the legal mandate to conserve threatened or endangered species and BLM's policy to conserve all special status species, land use planning strategies, desired outcomes and decisions should result in a reasonable conservation strategy for these species
- Land use plan decisions should be clear and sufficiently detailed to enhance habitat or prevent avoidable loss of habitat pending the development and implementation of implementation-level plans. This may include identifying stipulations or criteria that would be applied to implementation actions.
- Land use plan decisions should be consistent with BLM's mandate to recover listed species and should be consistent with objectives and recommended actions in approved recovery plans, conservation agreements and strategies, MOUs and applicable biological opinions for threatened and endangered species.

Wildland Fire Management

- Fire management strategies must recognize the role of wildland fire as an essential ecological process and natural change agent.
- Fire management strategies must result in minimum suppression costs, considering firefighter and public safety, benefits, and values to be protected; consistent with resource objectives.
- Fire management decisions (goals and objectives, and allowable uses and management actions) must reflect that the protection of human life is the single, overriding priority. Other priorities (protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources) are based on the values to be protected, human health and safety, and costs of protection.
- Consistent with these principles, identify landscape-level fire management goals and objectives, which would be achieved through allowable uses and management actions.
- Use fire regime/condition class methodology to identify desired wildland fire conditions.
- Wildland fire management goals and objectives must be closely coordinated with vegetation management goals and objectives.
- Identify allowable uses and management actions to achieve the fire management goals and objectives, and support the goals and objectives for vegetation, wildlife, and other resources.
- As part of identifying allowable uses, identify the geographic areas that are suitable for wildland fire use, provided conditions are appropriate. Also, identify the geographic areas where wildland fire use is not appropriate due to social, economic, political, or resource constraints (e.g., WUI areas); and where suppression action would be taken.
- As part of identifying management actions to achieve goals and objectives, identify the types of fuels management or vegetation management treatments (e.g.; mechanical, biological, and chemical treatments and prescribed fire) that would be implemented.
- Allowable uses and management actions include the identification of restrictions on fire management practices (including both wildfire suppression and fuels management) needed to protect natural or cultural resource values. Restrictions may be structured to allow flexibility to apply restrictions on a seasonal or annual basis, based on resource conditions, weather factors, and operational capability.
- Establish landscape-scale fire management priorities or provide criteria that will guide more site-specific priorities at the fire management plan level.

Cultural Resources

- Identify special cultural resource restrictions that may affect the location, timing or method of development or use of other resources in the planning area.
- Identify site-specific use restrictions from cultural resources currently being actively managed.
- Identify area-wide criteria for recognizing potential cultural resource conflicts, such as geographic characteristics of sacred sites, historic properties, or cultural landscapes (springs, ridges, peaks, caves, and rock shelters, for example).
- Consider these restrictions and criteria in all proposed land and resource use decisions.
- Identify measures to pro-actively manage, protect, and use cultural resources, including traditional cultural properties.
- The scope and scale of cultural resource identification are much more general and less intensive for land use planning than for processing site-specific use proposals. Instead of new, on-the-ground inventory, the appropriate identification level for land use planning is a regional overview:
    1. A compilation and analysis of reasonably available cultural resource data and literature.
    2. A management-oriented synthesis of the resulting information that includes priorities and a strategy for accomplishing needed inventory.
- If land use decisions, however, are more specific in terms of impacts, they may require a more detailed level of identification of the scope and nature of cultural resources during land use planning.
- RMPs will include at least the following two goals:
    1. Identify, preserve, and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations.
    2. Seek to reduce imminent threats and resolve potential conflicts from natural or human-caused deterioration, or potential conflict with other resource uses by ensuring that all authorizations for land use and resource use will comply with the NHPA Section 106.
- All cultural properties in the RMP area, whether already recorded or projected to occur on the basis of existing-data synthesis, including cultural landscapes, will be allocated to the uses listed in **Table A-1**, Cultural Use Allocations and Management Actions, according to their nature and relative preservation value. These use allocations pertain to cultural resources, not to areas of land.

Table A-1
Cultural Use Allocations and Management Actions

Use Allocation	Management
a. Scientific use	Permit appropriate research, including date recovery
b. Conservation for future use	Propose protective measures/designations 1
c. Traditional use	Consult with Tribes determine limitations 1
d. Public use	Determine permitted use 1
e. Experimental use	Determine nature of experiment
f. Discharged from management	Remove protective measures

1. Safeguards against incompatible land and resource uses may be imposed through withdrawals, stipulations on leases and permits, design requirements, and similar measures which are developed and recommended by an appropriately staffed IDT.

Paleontology

Identify criteria or use restrictions to ensure that:

(a) Areas containing, or that are likely to contain, vertebrate or noteworthy occurrences of invertebrate or plant fossils are identified and evaluated prior to authorizing surface-disturbing activities;

(b) Management recommendations are developed to promote the scientific, educational and recreational uses of fossils; and

(c) Threats to paleontological resources are identified and mitigated as appropriate

Wilderness Characteristics

- Identify decisions to protect or preserve wilderness characteristics (naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive and unconfined recreation).
- Include goals and objectives to protect the resource and management actions necessary to achieve these goals and objectives. For authorized activities, include conditions of use that would avoid or minimize impacts to wilderness characteristics.

Visual Resources

(under Recreation and Visitor Services p. 15 and Comprehensive Trails and Travel Management p.17)

Under Recreation

- Visual resource management classes need to be correlated with the recreation management objectives and setting prescriptions that have been set for each Recreation Management Zone (RMZ) delineated.

Under Comprehensive Trails and Travel Management

- In developing travel management areas, consider the following:

d). setting characteristics that are to be maintained (including recreation opportunity system and VRM settings).

RESOURCE USES

Coal

- The land use plan is the chief process by which public land is reviewed to assess whether there are areas suitable for leasing or unsuitable for all or certain types of coal mining operations under Section 522(b) of the Surface Mining Control and Reclamation Act.
- Identify the following consistent with the goals and objectives for natural resources within the planning area:
- Unleased coal lands that are acceptable for further consideration for coal leasing and development and those that are not.
- Areas unsuitable for surface mining of coal (43 CFR 1610.7-1) under the criteria set forth in 43 CFR 3461.5.
- For acceptable lands, areas suitable for development by all mining methods or by only certain stipulated mining methods, such as surface or underground mining (see 43 CFR 3461).
- Any special conditions that must be met during more detailed planning, lease sale, or post-lease activities, including measures required to protect other resource values (see 43 CFR 3461).
- An estimate of the amount of coal recoverable by either surface or underground mining operations or both (43 CFR 3420.1-4(d)). Only those areas that have development potential may be identified as acceptable for further consideration for leasing.
- Areas that have development potential for coal leasing according to the screening process outlined in 43 CFR 3420.1-4(e)(1-4).
- Areas to be withdrawn from further consideration for leasing to protect other resource values and land uses that are locally, regionally or nationally important or unique and that are not included in the unsuitability criteria discussed in 43 CFR 3461.5.

Fluid Minerals (Oil and Gas, Tar Sands, and Geothermal Resources)

- Areas open to leasing, subject to existing laws, regulations, and formal orders; and the terms and conditions of the standard lease form.
- Areas open to leasing, subject to moderate constraints such as seasonal and controlled surface use restrictions. (These are areas where it has been determined that moderately restrictive lease stipulations may be required to mitigate impacts to other land uses or resource values).
- Areas open to leasing, subject to major constraints such as no-surface-occupancy stipulations on an area more than 40 acres in size or more than

.25 mile in width. (These are areas where it has been determined that highly restrictive lease stipulations are required to mitigate impacts to other lands or resource values. This category also includes areas where overlapping moderate constraints would severely limit development of fluid mineral resources.)

- Areas closed to leasing. (These are areas where it has been determined that other land uses or resource values cannot be adequately protected with even the most restrictive lease stipulations; appropriate protection can be ensured only by closing the lands to leasing.) Identify whether such closures are discretionary or nondiscretionary; and if discretionary, the rationale.
- Resource condition objectives that have been established and specific lease stipulations and general/typical conditions of approval and BMPs that will be employed to accomplish these objectives in areas open to leasing.
- For each lease stipulation, the circumstances for granting an exception, waiver, or modification. Identify the general documentation requirements and any public notification associated with granting exceptions, waivers, or modifications.
- Whether the leasing and development decisions also apply to geophysical exploration.
- Whether constraints identified in the land use plan for new leases also apply to areas currently under lease.
- Long-term resource condition objectives for areas currently under development to guide reclamation activities prior to abandonment.

(Note: A plan-level decision to open the lands to leasing represents BLM's determination, based on the information available at the time, that it is appropriate to allow development of the parcel consistent with the terms of the lease, laws, regulations, and orders, and subject to reasonable conditions of approval. When applying leasing restrictions, the least restrictive constraint to meet the resource protection objective should be used.)

Locatable Minerals

- For lands that are open to the location of lode, placer, and mill claims, the claimant has statutory authority under the mining laws to ingress, egress and development of those claims. This authority means that those areas open to mineral entry for the purposes of exploration or development of locatable minerals cannot be unreasonably restricted.
- Identify the following consistent with the goals and objectives of locatable mineral exploration and development in concert with the protection of natural resources within the planning area:
    - Areas recommended for closure to the mining laws for locatable exploration or development (that must be petitioned for withdrawal).

- Any terms, conditions, or other special considerations needed to protect other resource values while conducting activities under the operation of the mining laws.

Mineral Materials

- Identify the following consistent with the goals and objectives for the exploration, development, and disposal of mineral materials in concert with the protection of natural resources within the planning area:
  - Areas open or closed to mineral material disposal.
  - Any terms, conditions, or other special considerations needed to protect resource values while operating under the mineral materials regulations.

Livestock Grazing

- Identify lands available or not available for livestock grazing (see 43 CFR 4130.2(a)), considering the following factors:
  - Other used for the land;
  - Terrain characteristics;
  - Soil, vegetation, and watershed characteristics;
  - The presence of undesirable vegetation, including significant invasive Weed infestations; and
  - The presence of other resources that may require special management or protection, such as special status species, special recreation management areas (SRMAs), or ACECs.
- Decisions identifying lands available, or not available, for livestock grazing may be revisited through the amendment or revision process if the grazing preference or permit on those lands has been voluntarily relinquished, or if there are outstanding requests to voluntarily relinquish the grazing preference or permit.
- If an evaluation of Land Health Standards identifies and allotment or group of allotments where Land Health Standards cannot be achieved under any level or management of livestock use, then decisions identifying those areas as available for livestock grazing need to be revisited.
- For lands available for livestock grazing, identify on an area-wide basis both the amount of existing forage available for livestock (expressed in AUMs) and future anticipated amount of forage available for livestock with full implementation of the land use plan while maintaining a thriving natural ecological balance and multiple-use relationships. The land use plan needs to describe how these public lands will be managed to become as productive as feasible for livestock grazing, including a description of possible grazing management practices such as grazing systems, range improvements (including land treatments), changes in seasons of use and/or stocking rates.

In addition, identify guidelines and criteria for future allotment specific adjustments in the amount of forage available for livestock, season of use, or other grazing management practices.

Recreation and Visitor Services

- Identify special recreation management areas (SRMAs).
- Each SRMA has a distinct, primary recreation-tourism market as well as a corresponding and distinguishing recreation management strategy.
- For each SRMA selected, determine whether that primary market-based strategy will be to manage for a:
    - Destination recreation-tourism market;
    - Community recreation-tourism market; or
    - Undeveloped recreation-tourism market.
- The determination needs to be stated in the plan.
- Describe the market that corresponds to that specific recreation management strategy (who they are and where they are located).
- Divide recreation areas that have more than one distinct, primary recreation market into separate SRMAs.
- For each SRMA identified, delineate discrete recreation management zone (RMZ) boundaries.
- Each RMZ has four defining characteristics – it:
    - Serves a different recreation niche within the primary recreation market.
    - Produces a different set of recreation opportunities and facilitates the attainment of different experiences and benefit outcomes (to individuals, households and communities, economies, and the environment).
    - Has distinctive recreation setting character.
    - Requires a different set of recreation provider actions to meet the strategically-targeted primary recreation market demand.
- To address these four variables within each RMZ, make the following land-use allocation decisions:
    - Identify the corresponding recreation niche to be served;
    - Write explicit recreation management objectives for the specific recreation opportunities to be produced and outcomes to be attained (activities, experiences, and benefits);
    - Prescribe recreation setting character conditions required to produce recreation opportunities and facilitate the attainment of both

recreation experiences and beneficial outcomes, as targeted above (the recreation opportunity spectrum (ROS) is one of the existing tools for describing existing setting character and prescribing desired setting character); and

  - Briefly describe the activity planning framework that addresses recreation management, marketing, monitoring, and administrative support actions (i.e. visitor services, permits and fees, recreation concessions, and appropriate use restrictions) necessary to achieve explicitly-stated recreation management objectives and setting prescriptions.

- Visual resource management classes need to be correlated with the recreation management objectives and setting prescriptions that have been set for each RMZ delineated.
- Anything not delineated as an SRMA is an extensive recreation management area (ERMA). Therefore, actions within ERMAs are generally implemented directly from land use plan decisions and do not require activity-level planning. Land use plan decisions must, therefore, include recreation management objectives for all ERMAs. Consider addressing visitor health and safety, user conflict and resource protection issues in particular through these recreation management objectives. However, land use plan decisions for ERMAs need to also identify implementing recreation management, marketing, monitoring, and administrative support actions of the kinds listed for SRMAs under implementation decisions listed below because no follow-up implementation decisions at the activity plan level are required for ERMAs. (*NOTE: if recreation demand (i.e. from an undeveloped recreation-tourism market) requires maintenance of setting character and/or production of associated activity, experience, and benefit opportunities/outcomes, the area should be identified and managed as an SRMA, rather than being custodially managed as an ERMA.*)
- Implementation decisions that need to be made for ERMAs:
  - Recreation management (of resources, visitors, and facilities, such as developed recreation sites, roads, and trails, and recreation concessions).
  - Recreation marketing (including outreach, information and education, promotion, interpretation, environmental education; and other visitor services.
  - Recreation monitoring (including social, environmental, and administrative indicators and standards).
  - Recreation administration (regulatory; permits and fees, including restrictions where necessary and appropriate; recreation concessions; fiscal; data management; and customer liaison).
- Recognition of singularly dominant activity-based recreation demand of and by itself (i.e. heavy off-highway vehicle use, river rafting, etc.) however great,

generally constitutes insufficient rationale for the identification of an SRMA and the subsequent expenditure of major recreation program investments in facilities and/or visitor assistance. This does not mean that the expenditure of substantial custodial funding is unwarranted when circumstances require it, but such expenditures should be geared to take care of the land and its associated recreation-tourism use and not to provide structured recreation opportunities which characterize SRMAs.

Comprehensive Trails and Travel Management

- Delineate travel management areas and designate off-highway vehicle management areas.
- Comprehensive travel management planning should address all resource use aspects (such as recreation, traditional, casual, agricultural, commercial, and educational) and accompanying modes and conditions of travel on the public lands, not just motorized or off-highway vehicles activities.
- In the RMP, travel management areas (polygons) should be delineated.
- Identify acceptable modes of access and travel for each travel management area (including over-land, over-water, over-snow and fly-in access [remote airstrips and float planes]).
- In developing these areas, consider the following:
    - consistency with all resource program goals and objectives;
    - primary travelers;
    - objectives for allowing travel in the area;
    - setting characteristics that are to be maintained (including recreation opportunity system and VRM settings); and
    - primary means of travel allowed to accomplish the objectives and to maintain setting characteristics.
- All public lands are required to have **off-highway vehicle area designations** (see 43 CFR 8342.1). Areas must be classified as open, limited, or closed to motorized travel activities. Criteria for open, limited, and closed to motorized travel activities. Criteria for open, limited, and closed area designations are established in 43 CFR 8340.0-5(f), (g) and (h), respectively.
- For areas classified as limited, consider a full range of possibilities, including travel that will be:
    - Limited to types or modes of travel, such as foot, equestrian, bicycle, motorized, etc.
    - Limited to existing roads and trails,
    - Limited to time or season of use,
    - Limited to certain types of vehicles (i.e. OHVs, motorcycles, etc.)

  - Limited to licensed or permitted vehicles or users,
  - Limited to BLM administrative use only, or other types of limitations.

- In addition, provide specific guidance about the process for managing motorized vehicle access for authorized, permitted or otherwise approved vehicles for those specific categories of motorized vehicle uses that are exempt from a limited designation (see CFR 8340.0-5(a)(1-5).
- At a minimum, the travel management area designation for wilderness study areas (WSAs) must be limited to ways and trails existing at the time the area became a WSA. Open areas within WSAs are appropriate only for sand dune or snow areas designated as such prior to October 21, 1976. Existing roads, ways and trails must be fully documented and mapped. This applies to both motorized and mechanized transport (see Interim Management Policy and Guidelines for Lands Under Wilderness Review H-8550-1(I.)(B.)(11) for mechanized transport). In addition, future designations may be made for a WSA if it is released from study.
- Except as otherwise provided by law, congressionally designated wilderness areas are statutorily closed to motorized and mechanized use. These areas should be shown in the land use plans along with the acreage affected.

Implementation Decisions

- (Note: These types of decisions are normally not made as part of the RMP Revision process. However, the new LUP planning guidance requires that we make the following travel management implementation decisions to the extent practical.)
- Complete a defined travel management network (system of areas, roads and/or trails) during the development of the land use plan, to the extent practical. If it is not practical to define or delineate the travel management network during the land use planning process, a preliminary network must be identified and a process established to select a final travel management network. Possible reasons for not completing the final network might be size or complexity of the area, controversy, incomplete data, or other constraints.
- For those areas where the final travel management network <u>is to be deferred</u> in the RMP, then the RMP should document the decision-making process used to develop the initial network, provide the basis for future management decisions, and help set guidelines for making road and trail network adjustments throughout the life of the plan. The identification of the uncompleted travel management networks should be delineated in the land use plan and the following tasks completed for each area:
  - Produce a map of a preliminary road and trail network.
  - Define short-term management guidance for road and trail access and activities in areas or sub-areas not completed.

  - Outline additional data needs, and a strategy to collect needed information.
  - Provide a clear planning sequence, including public collaboration, criteria and constraints for subsequent road and trail selection and identification.
  - Provide a schedule to complete the area or sub-area road and trail selection process.
  - Identify any easements and rights-of-ways (to be issued to the BLM or others) needed to maintain the preliminary or existing road and trail network.
- For those areas where the final travel management network **is to be completed** in the RMP, the RMP should establish a process to identify specific areas, roads and/or trails that will be available for public use, and specify limitations placed on use. Products from this process will include:
  - A map of roads and trails for all travel modes.
  - Definitions and additional limitations for specific roads and trails (defined in 43 CFR 8340.0-5(g)).
  - Criteria to select or reject specific roads and trails in the final travel management network, add new roads and trails and to specify limitations.
  - Guidelines for management, monitoring, and maintenance of the system.
  - Indicators to guide future plan maintenance, amendments, or revisions related to travel management network.
  - Needed easements and rights-of-ways (to be issued to the BLM or others) to maintain the existing road and trail network providing public land access.

Forestry

- Identify characteristics (indicators) to describe healthy forest conditions (i.e. desired outcomes) for forest/woodland types found within the planning area (also see I(C), Vegetation).
- Identify the suite of possible management actions (including appropriate harvest, reforestation, and forest development methods), and associated BMPs, that can be applied to meet desired outcomes.
- Identify areas that are available and have the capacity for planned, sustained-yield timber harvest or special forest product harvest. A probable sale quantity (PSQ) should be determined, if possible, for those areas determined to be available for harvest. The PSQ is the allowable harvest level that can be maintained without decline over the long term if the schedule of harvests and regeneration are followed. PSQ recognizes a level of uncertainty in meeting

the determined level; this uncertainty is typically based on other environmental factors that preclude harvesting at a particular time (for example, because of watershed or habitat concerns). A PSQ is not a commitment to offer for sale a specific level of timber volume every year.

Lands and Realty

Identify the following consistent with the goals and objectives for natural resources within the planning area:

- Lands for retention (43 CFR 2400), proposed disposal, or acquisition (based on acquisition criteria identified in the land use plan; FLPMA Section 205(b)) (Oregon Natural Resources Council, 78 IBLA 124 (1983)). Lands are to be retained in Federal ownership; unless it is determined that disposal of a particular parcel will serve the national interest (FLPMA Section 102(a) (1)). Land use plans should avoid prescribing the method of disposal, acquisition, or property interest to be acquired.
- Lands or interest in lands that are available for disposal under a variety of disposal authorities provided they meet the criteria outlined in FLPMA. Lands available for disposal must be identified by parcel or by specific areas (on a map or by legal description).
- Lands available for disposal under the Federal Land Transaction Facilitation Act of 2000 (FLTFA). The FLTFA amended FLPMA to allow retention by the BLM of receipts received from sale of land or interests in land under Section 203 of FLPMA or conveyance of mineral interest under Section 209(b) of FLPMA provided a land use plan was completed prior to July 25, 2000. The FLTFA does not apply to lands identified for disposal after July 25, 2000.
- Proposed withdrawal areas including existing withdrawals to be continued, modified, or revoked (including how the lands would be managed if the withdrawal were relinquished and an opening order issued) (see 43 CFR 2300).
- Land Classifications under Section 7 of the Taylor Grazing Act of 1934, as amended (43 USC 315f). The procedures applicable to Section 7 outlined in 43 CFR 2400 must be followed. The following actions require classification: Recreation and Public Purposes Act sales and leases, agricultural entries and state grants. To the extent that the land use planning procedures pursuant to 43 CFR 2400, the latter procedures shall be followed and applied. The analysis that supports classification decisions is normally the same analysis utilized in the land use planning/NEPA process to make decisions concerning the disposal or retention of public lands. For any classification decision made through the land use plan, initiate the classification decision requirements (i.e. proposed and initial decisions required under 43 CFR 2400) at the time the decision document is issued for the land use plan.

- Where, and under what circumstances, authorizations for use, occupancy, and development (such as major leases and land use permits) may be granted (see 43 CFR 2740, 2912, 2911, and 2920, respectively).
- Existing and potential development areas for renewable energy projects (i.e. wind and solar), communication sites and other uses.
- Right-of-way avoidance and exclusion areas (areas to be avoided but may be available for location of right-of-ways with special stipulations and areas which are not available for location of right-of-ways under any conditions).
- Terms and conditions that may apply to right-of-way corridors or development areas, including BMPs to minimize environmental impacts and limitations on other uses which would be necessary to maintain the corridor and right-of-way values.

Transportation Facilities

Identify land areas available or suitable for transportation facilities. Identify types of transportation facilities that are appropriate for the planning area. Identify limitations, if any, on the types or locations of facilities for specified areas.

Identify the area(s) having in-place transportation facilities that should be removed. Identify road repair, road rehabilitation, road construction, and maintenance standards appropriate to specific areas. Identify limitations, if any, on road repair road rehabilitation, road construction, and maintenance actions. Identify limitations, if any, on road density (i.e. miles/section) for specific areas.

Renewable Energy (under Lands section)

Existing and potential development areas for renewable energy projects (i.e. wind and solar), communication sites and other uses.

SPECIAL DESIGNATIONS

ACECS (Administrative Designations)

Designate ACECs and identify goals, standards and objectives for each area, as well as general management practices and uses, including necessary constraints with mitigation measures (also see BLM Manual 1613). This direction should be specific enough to minimize the need for subsequent ACEC management plans. ACECs must meet the relevance and importance criteria in 43 CFR 1610.7-2(a) and must require special management (43 CFR 1601.0-5(a)) to:

- Protect the area and prevent irreparable damage to resources or natural systems.
- Protect life and promote safety in areas where natural hazards exist.
- Designate research natural areas and outstanding natural areas as types of ACECs using the ACEC designation process.

Wilderness Study Areas (Administrative Designations)

Manage WSAs under the interim management policy (H-8550-1) until they are designated wilderness or released by Congress. Identify management direction for WSAs should they be released from wilderness consideration by Congress.

Other Administrative Designations

- Designate BLM Scenic or Back County Byways. Detailed procedural guidance for nomination and designation of BLM byways, as well as other byway designations occurring on BLM lands (such as All American Roads, National Scenic Byways, State Scenic Byways, Forest Scenic Byways, and similar) can be found in Handbook 8357-1: Byways, 12/17/93.
- Designate national recreation trails, Watchable Wildlife viewing sites, wild horse and burro ranges, or other BLM administrative designations.

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APPENDIX B
ALLOTMENTS IN THE KREMMLING FIELD OFFICE

Table B-1
Allotments in the Kremmling Field Office

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
00007 Coal Mtn	224	2240	2464	10	03	C	28	0	28	Not assessed	N/A	N/A	Rotation	6/1 - 9/30	Sagebrush Steppe Coniferous Forest
00008 Kerwin	60	156	216	20	03	M	11	0	11	Not assessed	N/A	N/A	Permittee Option	3/1 - 11/30	Sagebrush Steppe
07001 Adams Ind	689	1920 State 5520	8129	9	03	C	100	0	100	Not assessed	N/A	N/A	Permittee Option	5/16 - 10/31	Sagebrush Steppe
07004 Allard	7342	0 State 193	7535	100	03	I	802	0	802	2003 passed	N/A	N/A	Rest Rotation	6/1 - 9/15	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07005 Murphy East	151	523	674	22	03	C	36	0	36	Not assessed	N/A	N/A	Permittee Option	7/1 - 11/17	Sagebrush Steppe Coniferous Forest Aspen
07006 Barnes	66	114	180	1	03	C	7	0	7	Not assessed	N/A	N/A	Permittee Option	10/1 - 11/17	Sagebrush Steppe
07010 Bolton Draw	2570	120 State 905	3595	71	03	I	564	213	352	2000 passed	N/A	N/A	Rest and Deferred Rotation	6/1 - 8/15	Sagebrush Steppe
07012 Creek Lease	320	8183 State 640	9143	7	03	C	25	12	13	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/30	Sagebrush Steppe Coniferous Forest Aspen
07014 Fisher Draw	3016	0	3016	100	03	I	200	0	200	2003 passed	N/A	N/A	Rest Rotation	6/15 - 8/14	Sagebrush Steppe
07015 Independence Mtn	12686	5901 State 6050	24637	29	03	M	295	0	295	2003 passed	N/A	N/A	Rest Rotation	6/20 - 9/25	Sagebrush Steppe Coniferous Forest Aspen
07016 Hill Ranch	1544	953	2497	60	03	C	143	0	143	2003 passed	N/A	N/A	Rest Rotation	7/16 - 9/30	Sagebrush Steppe Coniferous Forest Aspen
07017 Windy Gap	2478	917	3395	74	03	C	241	0	241	2003 passed	N/A	N/A	Rest Rotation	7/16 - 9/30	Sagebrush Steppe, Aspen
07018 Alkali Lake	2152	0	2152	100	03	I	514	260	254	2003 passed	N/A	N/A	Rest Rotation	5/20 - 7/1	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07019 Holiday Field	670	745	1415	13	03	M	142	110	32	2003 Failed	Livestock Grazing	Rest Rotation Grazing System	Rest Rotation	5/16 - 7/31	Sagebrush Steppe, Native seeding
07020 California Gulch	11761	831	12592	100	03	I	1296	0	1296	2003 passed	N/A	N/A	Rest Rotation	6/1 - 7/18	Sagebrush Steppe
07021 Brands	705	856	1561	24	03	C	116	0	116	Not assessed	N/A	N/A	Permittee Option	7/1 - 8/31	Sagebrush Steppe
07022 9 79 3	280	160	440	30	03	C	44	0	44	Not assessed	N/A	N/A	Permittee Option	5/24 - 7/8	Sagebrush Steppe
07023 Upper Sudduth Draw	4156	0	4156	100	03	I	423	61	362	2000 Failed	Livestock Grazing	Rest Rotation Grazing System	Rest Rotation	6/1 - 7/3	Sagebrush Steppe
07024	848	0	848	100	03	C	100	0	100	Not assessed	N/A	N/A	Permittee Option	6/1 - 6/30	Sagebrush Steppe
07025	540	0	540	100	03	C	67	0	67	Not assessed	N/A	N/A	Permittee Option	6/1 - 6/30	Sagebrush Steppe
07026	80	0	80	2	03	C	2	0	2	Not assessed	N/A	N/A	Permittee Option	5/1 - 5/15	Sagebrush Steppe
07027	138	0	138	2	03	C	5	0	5	Not assessed	N/A	N/A	Permittee Option	6/1 - 10/16	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07028	104	0	104	21	03	C	37	0	37	Not assessed	N/A	N/A	Permittee Option	6/1 - 6/14	Sagebrush Steppe
07030 Butte Indiv	1088	230	1318	100	03	C	118	0	118	Not assessed	N/A	N/A	June Only	6/1 - 6/30	Sagebrush Steppe Coniferous Forest Aspen
07031 Brownlee	2554	1650	4204	65	03	I	262	0	262	2001 passed	N/A	N/A	Deferred Rotation	5/16 - 9/30	Sagebrush Steppe
07032 Deer Creek	4734	1760	6494	63	03	I	415	0	415	2004 passed	N/A	N/A	Rest Rotation	6/2 - 10/10	Sagebrush Steppe
07034 Chandler	145	345	450	12	03	C	25	0	25	Not assessed	N/A	N/A	Permittee Option	6/24 - 10/19	Sagebrush Steppe
07035 Chedsey F.	120	314	434	6	03	C	35	15	20	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/10	Sagebrush Steppe
07036 Turner	120	677	797	15	03	C	38	0	38	Not assessed	N/A	N/A	Permittee Option	6/10 - 10/15	Sagebrush Steppe
07039	465	40	505	56	03	C	126	0	126	Not assessed	N\A	N/A	Permittee Option	3/1 - 12/15	Sagebrush Steppe
07040 Dean Peak	240	1620	1860	10	03	C	18	0	18	Not assessed	N/A	N/A	Permittee Option	6/1 - 6/30	Sagebrush Steppe, Aspen

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07041 Pinkham	240	1792	2032	4	03	C	10	0	10	Not assessed	N/A	N/A	Permittee Option	7/1 - 8/9	Sagebrush Steppe, Coniferous Forest
07043	530	0	530	100	03	M	84	0	84	2000 passed	N/A	N/A	Deferred Rotation	6/1 - 7/15	Sagebrush Steppe
07044 Tointon	3660	0	3660	100	03	M	365	47	318	2005 passed	N/A	N/A	Deferred Rotation	6/1-8/7	Sagebrush Steppe
07045 Peterson Ridge West	824	192 State 50	1066	74	03	M	70	12	58	2005 passed	N/A	N/A	Deferred Rotation	6/1-8/7	Sagebrush Steppe
07046 Fish Hatchery	1060	0	1060	100	03	I	129	18	111	2005 passed	N/A	N/A	Rest Rotation	5/25-7/5	Sagebrush Steppe
07048 Headquarters	101	1029	1230	11	03	C	10	0	10	2005 passed	N/A	N/A	6/1-8/7	6/1-8/7	Sagebrush Steppe
07049 N. Sand Creek	320	801	1121	49	03	C	27	0	27	Not assessed	N/A	N/A	Permittee Option	5/1 - 11/30	Sagebrush Steppe
07050 Lower Sand Hills	537	0	537	100	03	C	59	0	59	Not assessed	N/A	N/A	Permittee Option	5/16 - 11/30	Sagebrush Steppe, Aspen
07051	2868	0	2868	100	03	M	496	446	50	2000 passed	N/A	N/A	Permittee Option	5/19 - 7/31	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07052	290	820	1110	12	03	C	31	15	16	Not assessed	N/A	N/A	Permittee Option	7/5 - 8/4	Sagebrush Steppe
07053 10-79-8	552	272	824	67	03	C	158	56	102	Not assessed	N/A	N/A	Deferred Rotation	5/18 - 6/30	Sagebrush Steppe
07054 Perkins N.P.	1060	0	1060	100	03	I	233	140	93	2002 passed	N/A	N/A	Deferred Rotation	5/15 - 6/25	Sagebrush Steppe
05055 Coon Creek	556	556	1112	62	03	C	111	41	70	Not assessed	N/A	N/A	Permittee Option	5/15 - 6/25	Sagebrush Steppe
07056 Mendenhall	160	410	570	28	03	C	36	13	23	Not assessed	N/A	N/A	Permittee Option	6/1 - 6/12	Sagebrush Steppe
07057 Sand Creek	841	874	1715	49	03	C	172	61	111	Not assessed	N/A	N/A	Permittee Option	5/20 - 6/19	Sagebrush Steppe
07058 Wenig	1025	640	1665	62	03	I	247	90	157	2002 passed	N/A	N/A	Deferred Rotation	5/1 - 6/25	Sagebrush Steppe
07059 Clark	57	0	57	100	03	C	15	5	10	Not assessed	N/A	N/A	Permittee Option	6/15 - 6/30	Sagebrush Steppe
07060	878	390	1268	71	03	C	102	9	93	2002 passed	N/A	N/A	6/1-7/31	6/1-7/31	Sagebrush Steppe
07061	80	1685	1765	24	03	C	53	4	49	Not assessed	N/A	N/A	Permittee Option	6/1 - 6/30	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07065	2349	0	2349		03	M	223	31	192	2002 passed	N/A	N/A	6/1 - 8/31	6/1 - 8/31	Sagebrush Steppe
07066 Indiv A	905	1320	2225	44	03	C	189	0	189	Not assessed	N/A	N/A	Permittee Option	6/15 - 3/31	Sagebrush Steppe
07067 Section 36	945	0	945	61	03	C	155	0	155	Not assessed	N/A	N/A	Deferred Rotation	6/1 - 8/30 4/1 - 4/30	Sagebrush Steppe
07068	475	2030	2505	6	03	C	170	0	170	Not assessed	N/A	N/A	Permittee Option	5/16 - 10/15	Sagebrush Steppe
07069	80	640	720	11	03	C	Not Permitted			Not assessed	N/A	N/A		None	
07072 Mann Draw	2882	320	3202	100	03	I	408	147	261	2005 passed	N/A	N/A	Deferred Rotation	5/30 - 7/2	Sagebrush Steppe
07073	1610	850	2460	87	03	M	256	87	169	2005 passed	N/A	N/A	6/5-7/3	6/5-7/3	Sagebrush Steppe
07077 W BLM & Trailer Past	120	438	558		03	C	43	0	43	Not assessed	N/A	N/A	Permittee Option	6/7 - 7/14	Sagebrush Steppe
07079 Upper Bush Draw	1005	0	1005	100	03	I	137	0	137	2005 Failed	Old fire	Rest and sprayed burn area	Rest Rotation	6/1 - 7/12	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07080 East Walden	3248	0	3248	100	03	I	408	147	261	2005 passed	N/A	N/A	Deferred Rotation	5/25 - 7/8	Sagebrush Steppe
07081 Peterson Ridge	2860	0	2860	100	03	I	275	0	275	2004 passed	N/A	N/A	Rest Rotation	6/1-10/30	Sagebrush Steppe
07083	95	1375	1470		03	C	17	0	17	Not assessed	N/A	N/A	Permittee Option	6/15-9/01	Sagebrush Steppe Coniferous Forest Aspen
07084 Verner East	2035	0	2035	100	03	I	214	57	157	2005 passed	N/A	N/A	Deferred Rotation	6/1-8/7	Sagebrush Steppe
07085 Verner West	10	120	160	25	03	C	5	0	5	Not assessed	N/A	N/A	Permittee Option	7/15 - 7/21	Sagebrush Steppe
07086 IOOF	106	166	326	50	03	C	20	0	20	Not assessed	N/A	N/A	Permittee Option	6/1-7/31	Sagebrush Steppe
07088 House Place	136	825	961	3	03	C	12	0	12	Not assessed	N/A	N/A	Permittee Option	6/20-8/25	Sagebrush Steppe
07089 Scattered	397	0	397	100	03	C	126	89	37	Not assessed	N/A	N/A	Permittee Option	6/1-9/30	Sagebrush Steppe
07090	400	1290	1690	27	03	C	49	0	49	Not assessed	N/A	N/A	Permittee Option	7/18-8/22	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07092 Linpore	1237	240	1477	83	03	C	209	60	149	2002 passed	N/A	N/A	Fall Use	8/23-9/15	Sagebrush Steppe Coniferous Forest Aspen
07093 Spring Creek	3214	960 State	4174	83	03	I	999	647	352	2006 passed	N/A	N/A	Deferred Rotation	6/11-7/12	Sagebrush Steppe
07094 Leatherman Place	100	25	125	100	03	C	81	1	80	Not assessed	N/A	N/A	Permittee Option	6/1-9/4	Sagebrush Steppe
07096	5831	713	6544		03	I	795	0	795	1999 passed	N/A	N/A	Permittee Option	5/10-10/09	Sagebrush Steppe
07097	82	1000	1082	8	03	C	8	0	8	Not assessed	N/A	N/A	Permittee Option	5/15-6/1	Sagebrush Steppe
07098	418	60	478	65	03	C	62	0	62	Not assessed	N/A	N/A	Permittee Option	6/1-7/14	Sagebrush Steppe
07099	71	2040	2111	3	03	C	24	0	24	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/30	Sagebrush Steppe
07100 Indiv Allot	480	530 State 200	1210	42	03	C	120	20	100	Not assessed	N/A	N/A	Permittee Option	6/1-6/30	Sagebrush Steppe
07101	170	310	480	46	03	C	139	102	37	Not assessed	N/A	N/A	Permittee Option	4/1-10/15	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07102	480	1120	1600	30	03	C	181	133	48	Not assessed	N/A	N/A	Permittee Option	5/16-9/15	Sagebrush Steppe
07103 Boettcher Ranch	360	6400	6760	3	03	C	52	0	52	Not assessed	N/A	N/A	Permittee Option	7/1-9/16	Sagebrush Steppe
07104 Confluence					03	C	27	0	27	Not assessed	N/A	N/A	Permittee Option	5/16-7/15	Sagebrush Steppe
07105 Manville Draw	3170	134 State 320	3624	91	03	I	396	0	396	2004 passed	N/A	N/A	Deferred Rotation	6/05-7/16	Sagebrush Steppe
07106 Manville Scattered	160	568	728	38	03	C	175	0	175	Not assessed	N/A	N/A	Permittee Option	5/16-7/15	Sagebrush Steppe
07107 Sentinel Mountain	1640	0	1640	100	03	I	192	28	164	2006 passed	N/A	N/A	June and July	6/1-7/20	Sagebrush Steppe Coniferous Forest Aspen
07108 Mattocks	200	333	533	54	03	C	38	0	38	Not assessed	N/A	N/A	Permittee Option	5/15-7/14	Sagebrush Steppe
07109	511	697	1208	55	03	C	117	29	88	Not assessed	N/A	N/A	Permittee Option	6/1-10/10	Sagebrush Steppe Aspen
07110 Mellen	2080	0	2080	100	03	I	355	0	355	1999 passed	N/A	N/A	Rest Rotation	5/25-11/01	Sagebrush Steppe/Irrigated Meadows

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07111 Allard Place	1595	1155 State 37	3390	27	03	M	81	0	81	2005 passed	N/A	N/A	Deferred Rotation	5/25-11/01	Sagebrush Steppe
07112 Taylor	730	0	730	100	03	C	65	0	65	2005 passed	N/A	N/A	Spring use with some fall trailing	5/25-11/01	Sagebrush Steppe Aspen
07113 Coyote Place	790	0	790	100	03	C	247	0	247	Not assessed	N/A	N/A	Permittee Option	6/1-9/11	Sagebrush Steppe
07114 Spicer Peak	520	2077	2597	10	03	C	12	0	12	Not assessed	N/A	N/A	Permittee Option	5/21-10/10	Sagebrush Steppe Coniferous Forest Aspen
07115 Indian Creek North	1042	763	1805	50	03	M	263	0	263	2006 passed	N/A	N/A	Deferred Rotation	7/1-9/30	Sagebrush Steppe Coniferous Forest Aspen
07116	2342	0	2342	100	03	M	281	0	281	2005 passed	N/A	N/A	Rest Rotation	5/21-7/20	Sagebrush Steppe
07117	47	65	112	44	03	C	4	0	4	Not assessed	N/A	N/A	Permittee Option	5/21-6/3	Sagebrush Steppe
07118	175	50	225	78	03	C	39	0	39	?????	N/A	N/A	Permittee Option	5/21-6/20	Sagebrush Steppe
07119 Canadian	1970	920	2890	46	03	I	259	0	259	1999 passed	N/A	N/A	Permittee Option	7/1-9/7	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07120 Lower Independence	1790	0	1790	100	03	I	200	0	200	1998 passed	N/A	N/A	Permittee Option	8/1-9/30	Sagebrush Steppe
07121 Pistol Pete	360	970	1330	9	03	C	48	0	48	Not assessed	N/A	N/A	Permittee Option	5/15-7/5	Sagebrush Steppe
07122	40	1680	1720	1	03	C	2	0	0	Not assessed	N/A	N/A	Permittee Option	5/1-9/30	Sagebrush Steppe
07123 6 81 7	219	0	219	100	03	C	102	0	102	Not assessed	N/A	N/A	Permittee Option	5/1-8/30	Sagebrush Steppe
07124 Indian Creek South	318	1005	1323	22	03	C	105	0	105	Not assessed	N/A	N/A	Permittee Option	6/15-7/10	not sure
07125 Davis Pasture	233	215	448	51	03	C	52	0	52	Not assessed	N/A	N/A	Permittee Option	9/1-10/20	Sagebrush Steppe
07126 Davis Meadow	51	1340	1391	3	03	C	9	0	9	Not assessed	N/A	N/A	Permittee Option	6/01-7/31	Sagebrush Steppe
07128 Iron Clad	330	0	330	100	03	C	51	0	51	Not assessed	N/A	N/A	Permittee Option	6/23-6/30	Sagebrush Steppe Coniferous Forest Aspen
07129 West Arapahoe D	180	120	300	60	03	C	36	0	36	Not assessed	N/A	N/A	Permittee Option	6/23-6/30	Sagebrush Steppe Coniferous Forest Aspen

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07130 Scattered Tracts	159	2654	2813	4	03	C	49	0	49	Not assessed	N/A	N/A	Permittee Option	6/23-6/30	Not sure
07131	741	436	1177	45	03	C	180	0	180	Not assessed	N/A	N/A	Permittee Option	5/16-9/15	Sagebrush Steppe
07132	52	800	852		03	C	29	0	29	Not assessed	N/A	N/A	Permittee Option	7/1-10/31	Sagebrush Steppe
07133 Sheep Mountain	1836	221	2057		03	I	246	46	200	2000 passed	N/A	N/A	June Use	6/1-6/30	Sagebrush Steppe Aspen
07134	400	450	853	50	03	C	53	0	53	Not assessed	N/A	N/A	Permittee Option	5/16-6/30	Sagebrush Steppe Aspen
07135 Williams Draw	2363	300	2663	67	03	I	336	76	260	1999 passed	N/A	N/A	Rest and Deferment	6/1-7/15	Sagebrush Steppe
07136 Bush Draw	1323	240	1563	93	03	I	232	55	177	1999 passed	N/A	N/A	Rest and Deferment	6/1-7/15	Sagebrush Steppe
07138 Scattered Tracts	264	0	264	100	03	C	20	0	20	Not assessed	N/A	N/A	Permittee Option	6/1-10/31	Sagebrush Steppe
07140 Mich R Hoover	520	0	520	100	03	C	125	0	125	Not assessed	N/A	N/A	Permittee Option	7/1-7/31	Coniferous Forest Aspen
07141 Illinois Ranch	5805	672 State 140	6617	81	03	I	892	81	811	2002 passed	N/A	N/A	Rest Rotation	6/1-8/19	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07146 Ill R Rogerson	160	1550	1710	9	03	C	36	0	36	Not assessed	N/A	N/A	Permittee Option	7/10-9/30	Sagebrush Steppe
07147 Ill R Scattered	190	0	190	100	03	C	140	0	140	Not assessed	N/A	N/A	Permittee Option	6/15-9/1	Sagebrush Steppe
07148 North Lake John	1107	0	1107	100	03	I	83	0	83	1999 Failed	Livestock	Rest	Rest Rotation	5/16-6/30	Sagebrush Steppe
07150 Grizzly McFarland	2800	20	2820	99	03	I	431	0	431	2006 passed	N/A	N/A	Deferred Rotation	7/1-8/9	Sagebrush Steppe
07151 Grizzly No. 4	800	0	800	100	03	I	52	0	52	2006 passed	N/A	N/A	June Use	6/8-6/21	Sagebrush Steppe
07152 Grizzly Big Pasture	520	1280	1800	16	03	C	312	0	312	Not assessed	N/A	N/A	Permittee Option	5/16-11/30	Sagebrush Steppe
07153 Grizzly Mexican Ridge	240	1270	1510	16	03	C	77	0	77	Not assessed	N/A	N/A	Permittee Option	6/1-9/30	Don't know
07154 Pole Mountain	80	720	800	10	03	C	35	0	35	Not assessed	N/A	N/A	Permittee Option	6/1-9/30	Sagebrush Steppe Aspen
07155 Grizzly No. 4A	334	0	334	100	03	I	19	0	19	2006 passed	N/A	N/A	June Only	6/3-6/7	Sagebrush Steppe
07156 Emigh 9 81 2	410	2801	3211		03	C	31	0	31	Not assessed	N/A	N/A	Permittee Option	5/15-10/15	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07157 Watson N.P.	520	275	795	66	03	C	134	0	134	Not assessed	N/A	N/A	Permittee Option	8/1-9/6	Sagebrush Steppe Aspen
07159 Independence	2610	4120	6730	39	03	C	809	0	809	Not assessed	N/A	N/A	Permittee Option	6/1-9/13	Sagebrush Steppe Coniferous Forest Aspen
07160 Blankenship Meadows	320	1120	1440	22	03	C	113	0	113	Not assessed	N/A	N/A	Permittee Option	9/15-11/14	Sagebrush Steppe
07161 Colorado Pasture	480	1440	1920	18	03	C	117	0	117	Not assessed	N/A	N/A	Permittee Option	5/20-8/26	Not sure
07162 Two Lakes	340	0	340	100	03	C	192	0	192	Not assessed	N/A	N/A	Permittee Option	6/1-6/30	Not sure
07163 Sand Hills	920	985 State 2719	4744	19	03	I	96	0	96	2006 passed	N/A	N/A	Deferred Rotation	6/1-7/31	Sagebrush Steppe Aspen
07164 Stephen A	1285	360 State 2078	3723	35	03	M	208	0	208	2004 passed	N/A	N/A	June and July	6/1-7/30	Sagebrush Steppe
07166 Stephens C	359	2195	2554		03	C	39	0	39	Not assessed	N/A	N/A	Permittee Option	6/1-6/30	Sagebrush Steppe
07167 Stephens D	1240	160	1380	86	03	C	78	0	78	2004 passed	N/A	N/A	June	6/1-6/30	Sagebrush Steppe Coniferous Forest Aspen

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07168 Ballinger Draw	1065	56 State 80	1201	89	03	I	131	0	131	1999 passed	N/A	N/A	Rest and Deferment	5/26-7/15	Sagebrush Steppe
07169 Sudduth Draw	1203	435	1638	74	03	I	138	0	138	1999 passed	N/A	N/A	Rest and Deferment	6/1-7/15	Sagebrush Steppe
07170 Streit 4A	320	638	958	9	03	C	10	0	10	1999 passed	N/A	N/A	Rest and Deferment	6/1-7/15	Sagebrush Steppe
07171 Streit 4B	327	15	342	96	03	C	45	0	45	1999 passed	N/A	N/A	Rest and Deferment	6/1-7/15	Sagebrush Steppe
07172 Swaft A	2045	0	2045	100	03	M	120	0	120	2005 passed	N/A	N/A	May and June	5/16-6/15	Sagebrush Steppe
07173 Swift B	400	1440	1840	3	03	C	37	0	37	Not assessed	N/A	N/A	Permittee Option	6/15-9/15	Sagebrush Steppe Coniferous Forest Aspen
07174 Swift C	200	2080	2280	5	03	C	19	0	19	Not assessed	N/A	N/A	Permittee Option	5/16-9/15	Sagebrush Steppe
07175 Walden Reservoir	2458	0	2458	100	03	I	150	0	150	2004 passed	N/A	N/A	June and July	6/10-7/9	Sagebrush Steppe
07176 5 North	60	340	400	15	03	C	11	0	11	Not assessed	N/A	N/A	Permittee Option	6/1-8/10	Sagebrush Steppe Coniferous Forest Aspen

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07177 5 West	93	80	173	67	03	C	6	0	6	Not assessed	N/A	N/A	Permittee Option	6/1-7/31	Sagebrush Steppe Coniferous Forest Aspen
07178 5 South	206	260	466	49	03	C	40	0	40	Not assessed	N/A	N/A	Permittee Option	6/1-7/31	Sagebrush Steppe Coniferous Forest Aspen
07179 Vils	500	0	500	100	03	C	48	0	48	Not assessed	N/A	N/A	Permittee Option	6/1-6/30	Sagebrush Steppe
07181 Wamsley B 7-81-9	194	559	753	15	03	C	187	0	187	Not assessed	N/A	N/A	Permittee Option	6/1-10/15	Sagebrush Steppe
07182 Wamsley C 7 80 2	160	0	160	100	03	C	53	0	53	Not assessed	N/A	N/A	Permittee Option	6/1-6/30	Sagebrush Steppe
07183 Wamsley D 6 81 2	625	0	625	100	03	C	113	0	113	Not assessed	N/A	N/A	Permittee Option	7/16-8/31	Sagebrush Steppe Aspen
07184 Wamsley E 6 81 3	270	840	1110	33	03	C	29	0	29	Not assessed	N/A	N/A	Permittee Option	6/1-6/30	Sagebrush Steppe
07185 Murphy West	200	2960	3160		03	C	80	0	80	Not assessed	N/A	N/A	Permittee Option	6/15-10/15	Sagebrush Steppe
07186 10 81 3	343	788 State 220	1351		03	C	68	0	68	1999 Failed	Livestock	Rest Rotation	Rest Rotation	5/15-10/31	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07187 South Alkali Lake	1504	0	1504	100	03	I	75	0	75	1999 passed	N/A	N/A	Rest Rotation	5/16-6/30	Sagebrush Steppe
07188 9 80 1	80	150	230	35	03	C	27	0	27	Not assessed	N/A	N/A	Permittee Option	12/01-3/31	Sagebrush Steppe
07189 Big Creek	1720	0	1720	100	03	I	160	46	114	2006 passed	N/A	N/A	Permittee Option	6/15-7/14	Sagebrush Steppe Coniferous Forest Aspen
07190 12 81 3	120	0	120	100	03	C	60	0	60	Not assessed	N/A	N/A	Permittee Option	10/16-11/30	Not sure
07191 Independence Mountain	1959	780	2739		03	I	242	0	242	2006 passed	N/A	N/A	Deferred Rotation	5/21-10/15	Sagebrush Steppe
07192 Baker Draw	2436	1387 State 600	4423	61	03	I	457	0	457	2006 passed	N/A	N/A	Permittee Option	6/1-8/30	Sagebrush Steppe
07193 Upper Meadow	344	1333	1677	17	03	C	101	0	101	Not assessed	N/A	N/A	Permittee Option	8/20-10/18	Sagebrush Steppe
07194 Meyring Ind	960	1720	2680		03	C	281	0	281	Not assessed	N/A	N/A	Permittee Option	5/25-11/30	Sagebrush Steppe
07196 Turpen 6 82 1	300	240	540	33	03	C	66	0	66	Not assessed	N/A	N/A	Permittee Option	5/1-6/30	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07199	235	1000 State 160	1395		03	C	26	0	26	Not assessed	N/A	N/A	Permittee Option	5/16-7/15	Sagebrush Steppe
07250 Bull Mountain	3225	2178 State 640	6043		15	I	803	363	440	1999 passed	N/A	N/A	Rest Rotation	6/1 - 9/30	Sagebrush Steppe Coniferous Forest
07251 Clover Valley Ranch	40	1195	1235		15	C	10	0	10	Not assessed	N/A	N/A	Permittee Option	7/16-9/15	Sagebrush Steppe Coniferous Forest Aspen
07252 Engen	1747	962	2709		15	I	221	0	221	2006 passed	N/A	N/A	Deferred Rotation	6/1-9/30	Sagebrush Steppe Coniferous Forest Aspen
07253 Grace Creek Ranch	4013	1136	5176		15	I	782	178	604	2006 passed	N/A	N/A	Deferred Rotation	6/1-10/11	Sagebrush Steppe Coniferous Forest Aspen
07254 Shell Creek	4732	1000	5732	84	15	I	455	0	455	2006 passed	N/A	N/A	Deferred Rotation	6/1 - 9/30	Sagebrush Steppe Coniferous Forest Aspen
07255 Crazy Mtn	2387	0	2387	100	15	I	256	0	256	2006 passed	N/A	N/A	Rotation	6/1 - 9/30	Sagebrush Steppe
07256 Hohnholz Ranch	3858	4280	8138		15	I	340	0	340	2003 passed	N/A	N/A	Same season of use for each pasture	5/28-10/15	Sagebrush Steppe
07257 Chimney Rock	140	111	251		15	C	15	0	15	Not assessed	N/A	N/A	Permittee Option	6/16 - 9/30	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07258 Red Mountain	2501	2840	5341		15	I	209	0	209	2002 passed	N/A	N/A	Deferred Rotation with Wyoming BLM	7/1-9/15	Sagebrush Steppe
07529 Durand	120	920	1040		15	C	12	0	12	Not assessed	N/A	N/A	Permittee Option	5/20 - 7/04	Sagebrush Steppe
07260 Forrester Creek	1360	960	2320	100	15	C	227	0	227	2006 passed	N/A	N/A	Rest Rotation	6/1 - 9/30	Sagebrush Steppe
07261 Clover Valley	402	5091	5493		15	C	99	0	99	Not assessed	N/A	N/A	Permittee Option	7/7 - 10/1	Sagebrush Steppe Aspen Coniferous Forest
07262 Bull Mtn Ranch	160	0	160	100	15	C	14	0	14	Not assessed	N/A	N/A	Permittee Option	9/10 - 9/30	Sagebrush Steppe
07500 Breeze	3418	40	3458	100	03	I	494	0	494	2006 passed	N/A	N/A	Rotation	5/15 - 12/15	Sagebrush Steppe
07501 C Lazy U	1175	992	2167	62	03	M	152	0	152	1999 passed	N/A	N/A	Rotation	6/15 - 10/15	Sagebrush Steppe Coniferous Forest Aspen
07502 Elk Mtn	1123	240	1363	70	03	C	124	0	124	Not assessed	N/A	N/A	Permittee Option	7/1 - 9/15	Coniferous Forest Mountain Meadow Aspen
07503 Ritschard C	667	0	667	100	03	I	92	0	92	Not assessed	N/A	N/A	Rotation	6/1 - 6/30	Sagebrush Steppe
07504 Dice Hill	1220	0	1220	100	03	C	340	41	299	2006 passed	N/A	N/A	Rotation	6/16 - 9/30	Sagebrush Steppe Coniferous Forest Aspen

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07505 Sulphur Gulch	4797	0	4797	100	03	I	532	223	309	1999 passed	N/A	N/A	None	No Longer Grazed	Sagebrush Steppe Coniferous Forest Aspen
07506 Antelope Pass	7600	0	7600	100	03	I	296	0	296	1999 passed	N/A	N/A	Rest Rotation	5/25 - 6/30	Sagebrush Steppe Aspen Copses
07507 Scholl	2353	1767	4120	10	03	I	310	0	310	2006 passed	N/A	N/A	Rotation	5/1 - 8/31	Sagebrush Steppe Coniferous Forest Aspen
07509 Weimer	4238	1671	5909	55	03	I	289	0	289	2006 passed	N/A	N/A	Rotation	6/28 - 11/10	Sagebrush Steppe Coniferous Forest Aspen
07510 Thompson	2762	946	3708	77	03	I	251	0	251	1999 passed	N/A	N/A	Permittee Option	6/1 - 10/10	Sagebrush Steppe Coniferous Forest Aspen
07511 Forster B	3084	0	3084	100	03	I	152	0	152	2000 passed	N/A	N/A	Season Long	6/1 - 9/30	Sagebrush Steppe Coniferous Forest Aspen
07512 Kimball	145	0	145	100	03	C	17	0	17	Not assessed	N/A	N/A	No Permit	None	Sagebrush Steppe
07513 Ainsley	40	320	360	20	03	C	3	0	3	Not assessed	N/A	N/A	Permittee Option	7/1 - 9/30	Sagebrush Steppe
07514 Deepe	40	320	360	4	03	C	6	0	6	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/30	Sagebrush Steppe
07515 Horn	320	0	320	100	03	C	61	0	61	Not assessed	N/A	N/A	Permittee Option	5/26 - 6/25	Sagebrush Steppe
07517 SanToy	400	0	400	100	03	M	21	0	21	Not assessed	N/A	N/A	No Permit	None	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07518 Linke R	40	0	40	100	03	C	3	0	3	Not assessed	N/A	N/A	No Permit	None	Sagebrush Steppe
07519 Little hO	885	0	885	100	03	C	50	0	50	2000 passed	N/A	N/A	Rest Rotation	6/1 - 8/15	Sagebrush Steppe Coniferous Forest Aspen
07521 Snider-Murphy	437	0	437	100	03	C	88	0	88	2005 passed	N/A	N/A	Season Long	6/1 - 7/31	Sagebrush Steppe
07522 Selak	5240	0	5240	100	03	C	225	0	225	Not assessed	N/A	N/A	No Permit	None	Sagebrush Steppe Coniferous Forest Aspen
07523 Sheriff A	520	0	520	100	03	C	20	0	20	2005 passed	N/A	N/A	Permittee Option	6/1 - 9/30	Sagebrush Steppe Coniferous Forest Aspen
07527 Sheriff B	5580	340	5920	100	03	I	470	0	470	2000 passed	N/A	N/A	Rest Rotation	6/1 - 9/30	Sagebrush Steppe Coniferous Forest Aspen
07529 Linke	1360	1280	2640	52	03	C	89	0	89	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/15	Sagebrush Steppe Coniferous Forest Aspen
07530 Linke	208	1190	1470	19	03	C	48	0	48	2004 passed	N/A	N/A	Permittee Option	6/1 - 9/15	Mountain Shrub Coniferous Forest Aspen
07531 Tenmile	40	0	40	100	03	C	5	0	5	Not assessed	N/A	N/A	No Permit	None	Sagebrush Steppe
07532 Murphy	403	600	1003	16	03	C	20	0	20	Not assessed	N/A	N/A	Permittee Option	7/1 - 9/15	Sagebrush Steppe Coniferous

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
															Forest
07533 W Cedar Ridge	839	3120	3959	100	03	C	116	0	116	Not assessed	N/A	N/A	Annual Late Use	9/1 - 9/30	Sagebrush Steppe
07535 Trough Road	1543	3160	4703	18	03	C	171	0	171	Not assessed	N/A	N/A	Permittee Option	6/1 - 10/31	Sagebrush Steppe Coniferous Forest Aspen
07536 Brown	285	0	285	33	03	C	40	0	40	Not assessed	N/A	N/A	Permittee Option	6/15 - 7/30	Sagebrush Steppe Coniferous Forest Aspen
07537 Yarmony Common	5896	0	5896	100	03	I	349	42	307	1999 passed	N/A	N/A	Deferred Rotation	5/10 - 6/20	Sagebrush Steppe Coniferous Forest Aspen
07538 Gore	1720	3000	4720	41	03	C	125	0	125	Not assessed	N/A	N/A	Annual Deferment	8/1 - 8/31	Sagebrush Steppe Coniferous Forest Aspen
07539 Murphy	589	0	589	13	03	C	98	0	98	Not assessed	N/A	N/A	Permittee Option	7/1 - 10/31	Sagebrush Steppe Coniferous Forest Aspen
07541 Mitchell	2745	0	2745	100	03	I	421	0	421				Rotation	5/15- 6/15	Sagebrush Steppe
07542 McQueary Gulch	1000	0	1000	100	03	I	178	0	178	1998 Failed	Livestock	Rest Rotation Grazing System	Rest Rotation	5/25 - 9/15	Sagebrush Steppe
07543 Loback	264	0	264	20	03	M	50	0	50	Not assessed	N/A	N/A	Permittee Option	5/16 - 7/30	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07545 Knorr	1238	1645	2883	26	03	M	258	0	258	2000 passed	N/A	N/A	Rotation	6/8 - 11/30	Sagebrush Steppe Coniferous Forest Aspen
07456 Ridgeway	60	0	60	100	03	C	6	0	6	Not assessed	N/A	N/A	Permittee Option	6/16 - 8/14	Sagebrush Steppe
07547 Blacktail West	40	0	40	15	03	C	6	0	6	Not assessed	N/A	N/A	Permittee Option	5/15 - 10/8	Sagebrush Steppe
07548 Diamond Creek	182	1285	1857	9	03	C	53	0	53	Not assessed	N/A	N/A	Permittee Option	6/10 - 7/15	Sagebrush Steppe
07550 McElroy	1480	0	1480	100	03	M	63	0	63	Not assessed	N/A	N/A	None; in Wolford mitigation area	None	Sagebrush Steppe Riparian
07551 McPhee	1103	0	1103	100	03	I	112	0	112		N/A	N/A	Rotation	6/1 - 9/30	Sagebrush Steppe Coniferous Forest Aspen
07552 Meadow	956	0	956	100	03	I	177	0	177	1999 passed	N/A	N/A	Rest Rotation	5/15 - 7/10	Sagebrush Steppe
07553 Mayhoffer	2003	766	2769	50	03	M	200	0	200	1999 Failed	Season Long Grazing	Deferred Rotation Grazing System	Deferred Rotation	5/20 - 9/15	Sagebrush Steppe
07556 Orr	6228	2400	8628	100	03	C	603	0	603	2006 passed	N/A	N/A	Rest Rotation	5/15 - 10/31	Sagebrush Steppe
07557 Perkins	321	1120	1441	26	03	C	59	0	59	Not assessed	N/A	N/A	Permittee Option	5/16 - 11/30	Sagebrush Steppe Irrigated Hayland

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07558 North Santoy	2476	4505	6981	11	03	C	500	0	500	Not assessed	N/A	N/A	Permittee Option	3/1 - 2/28	Sagebrush Steppe, Coniferous Forest, Aspen, Irrigated Hayland
07559 Reini	40	440	480	4	03	C	6	0	6	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/30	Sagebrush Steppe, Irrigated Hayland
07560 East Cedar Ridge	3095	0	3095	100	03	I	282	0	282	1999 passed	N/A	N/A	Rotation	4/22 - 11/15	Sagebrush Steppe
07561 Spruce Creek	4616	0	4616	100	03	C	598	0	598	Not assessed	N/A	N/A	Not Permitted	None	Coniferous Forest Mountain Meadow Aspen
07562 Sheephorn	798	0	798	100	03	M	41	0	41	1999 passed	N/A	N/A	Permittee Option	6/1 - 7/15	Coniferous Forest Mountain Meadow Aspen
07563 Skylark	369	0	369	100	03	C	37	0	37	Not assessed	N/A	N/A	Permittee Option	5/25 - 6/25	Sagebrush Steppe
07564 SanToy	400	664	1064	7	03	C	21	0	21	Not assessed	N/A	N/A	Permittee Option	5/16 - 10/15	Sagebrush Steppe
07565 Brown	6042	2505	8547	100	03	I	380	0	380	1999 passed	N/A	N/A	Permittee Option	7/1 - 8/31	Sagebrush Steppe, Coniferous Forest, Aspen
07567 Engle	480	893	1373	7	03	C	48	0	48	Not assessed	N/A	N/A	Permittee Option	5/16 - 10/15	Sagebrush Steppe
07568 RCA	6920	639	7719	95	03	I	325	0	325	2006 passed	N/A	N/A	Rest Rotation	6/1 - 6/30	Sagebrush Steppe
07569 Wheatley A	2395	0	2395	100	03	I	256	45	208	2006 passed	N/A	N/A	Permittee Option	5/16 - 6/19	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07573 Blue Valley	951	0	951	100	03	C	90	0	90	Not assessed	N/A	N/A	Not Permitted	None	Sagebrush Steppe, Coniferous Forest, Aspen
07574 Yarmony Mountain Ind	2500	160	2660	100	03	I	200	21	179	2001 passed	N/A	N/A	Rotation	6/1 - 8/1	Sagebrush Steppe, Coniferous Forest, Pinyon-Juniper, Aspen
07576 DeBerard	85	200	285	5	03	C	12	0	12	Not assessed	N/A	N/A	Permittee Option	5/1 - 8/15	Sagebrush Steppe
07579 Sinkovitz	6543	120	6663	100	03	I	345	0	345	2000 passed	N/A	N/A	Rest Rotation	6/1 - 9/15	Sagebrush Steppe, Coniferous Forest, Aspen
07580 Monument Creek	1092	0	1092	100	03	M	210	97	113	1999 passed	N/A	N/A	Permittee Option	7/1 - 8/15	Sagebrush Steppe, Coniferous Forest, Aspen
07581 Watson	120	640	760	11	03	C	21	0	21	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/15	Sagebrush Steppe, Coniferous Forest, Aspen
07582 Becker	200	566	766	25	03	C	44	0	44	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/15	Sagebrush Steppe
07583 Cottonwood Creek	571	0	571	100	03	C	81	0	81	1999 passed	N/A	N/A	Season Long	5/20 - 8/23	Sagebrush Steppe, Coniferous forest, Aspen
07585 Ellison A	1400	360	1760	50	03	M	64	0	64	1999 passed	N/A	N/A	Deferred Rotation	5/23 - 7/22	Sagebrush Steppe, Coniferous Forest, Pinyon-Juniper

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07586 Wheatley B	48	80	128	50	03	C	12	0	12	Not assessed	N/A	N/A	Permittee Option	5/16 - 7/15	Sagebrush Steppe
07588 Wheatley D	3982	1200	5182	50	03	I	350	0	350	2006 passed	N/A	N/A	Rotation	7/1 - 10/15	Sagebrush Steppe, Coniferous Forest, Mountain Meadow, Aspen
07589 Forster A	160	280	440		03	C	20	0	20	Not assessed	N/A	N/A	Permittee Option	6/1 - 9/30	Sagebrush Steppe
07751 Murray	800	0	800	100	15	C	60	0	60	1999 passed	N/A	N/A	Permittee Option	6/25 - 8/24	Sagebrush Steppe, Coniferous Forest, Aspen
07752 Skylark	830	0	2597	100	15	M	486	0	486	Not assessed	N/A	N/A	Rest Rotation		Sagebrush Steppe, Coniferous Forest, Aspen, Irrigated Pasture
07754 Fitch	2070	0	2070	100	15	I	343	218	125	2004 Failed	Historical Livestock Grazing	Rest Rotation Grazing System and Reduction in AUMs	Rest Rotation	6/1 - 9/30	Sagebrush Steppe, Salt shrub
07755 Selak E.	560	0	560	100	15	C	88	0	88	Not assessed	N/A	N/A	Not Permitted	None	Sagebrush Steppe, Coniferous Forest, Aspen
7757 Breeze C.	265	0	265	100	15	C	49	0	49	2000 passed	N/A	N/A	Deferred Rotation	6/16 - 7/15	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07758 Brown W.	520	0	520	100	15	C	86	0	86	2004 Failed	Livestock Grazing	Rest Rotation Grazing System	Rest Rotation	5/15 - 9/30	Sagebrush Steppe, Salt Shrub
07760 Curry R&M	1080	0	1080	100	15	C	89	0	89	Not assessed	N/A	N/A	Rest Rotation	5/17 - 9/30	Sagebrush Steppe
07762 Davison	671	396	1067	63	15	C	74	0	74	Not assessed	N/A	N/A	Permittee Option	5/15 - 6/25	Sagebrush Steppe
07766 Parsons	1390	85	1475	93	15	I	105	0	105	1999 Functioning at Risk	Historical Livestock Grazing	Rotation Grazing System	Rotation	5/18 - 11/30	Sagebrush Steppe
07767 McQueary Gulch	483	0	483	100	15	I	49	0	49	2000 Failed	Season Long Grazing	Rest Rotation Grazing System and Reduction in AUMs	Rest Rotation	5/25 - 9/15	Sagebrush Steppe
07769 Mayhoffer D.	105	560	665	100	15	C	14	0	14	Not assessed	N/A	N/A	Permittee Option	6/1 - 7/31	Sagebrush Steppe
07770 Orr T.	760	160	920	100	15	C	84	0	84	Not assessed	N/A	N/A	Deferred Rotation	6/1 - 8/10	Sagebrush Steppe, Coniferous Forest, Aspen
07775 Wendt	880	2360	3240	27	15	C	118	0	118	Not assessed	N/A	N/A	Deferred Rotation	6/1 - 9/10	Sagebrush Steppe, Coniferous Forest, Aspen
07777 Spacek	200	0	200	100	15	C	17	0	17	Not assessed	N/A	N/A	Rest Rotation	6/1 - 8/21	Sagebrush Steppe
07778 Horn Ranches	878	2600	3478	100	15	C	135	0	135	Not assessed	N/A	N/A	Permittee Option	5/25 - 6/30	Sagebrush Steppe

Table B-1
Allotments in the Kremmling Field Office (*continued*)

Allotment	BLM Acres	Private Acres	Total Acres	% Public Land	Land Type	Mgt Cat	Permitted AUMs	Susp AUMs	Active AUMs	S&G Assess	Reason for Failure	Action Taken	Grazing System	Grazing Season	Main Veg Community(s)
07780 Watt	40	160	200	100	15	C	6	0	6	Not assessed	N/A	N/A	Permittee Option	5/15 - 6/14	Sagebrush Steppe
07781 Sylvan Reservoir	40	0	40	100	15	C	3	0	3	Not assessed	N/A	N/A	Permittee Option	6/1 - 6/30	Grassland, Coniferous Forest
07783 Knorr Sec 15	760	2560	3320	100	15	C	101	0	101	2001 passed	N/A	N/A	Permittee Option	6/1 - 10/31	Sagebrush Steppe, Coniferous Forest, Aspen
07784 Hinman Original	40	0	40	100	15	C	4	0	4	Not assessed	N/A	N/A	Permittee Option	5/16 - 6/15	Sagebrush Steppe

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APPENDIX C
BLM *STANDARDS FOR PUBLIC LAND HEALTH AND GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT IN COLORADO*

STANDARDS FOR PUBLIC LAND HEALTH

Standards describe conditions needed to sustain public land health, and relate to all uses of the public lands. Standards are applied on a landscape scale and relate to the potential of the landscape.

Standard 1

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, landform, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.

Indicators

- Expression of rills, soil pedestals is minimal.
- Evidence of actively-eroding gullies (incised channels) is minimal.
- Canopy and ground cover are appropriate.
- There is litter accumulating in place and is not sorted by normal overland water flow.
- There is appropriate organic matter in soil.
- There is diversity of plant species with a variety of root depths.
- Upland swales have vegetation cover or density greater than that of adjacent uplands.
- There are vigorous, desirable plants.

Standard 2

Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.

Indicators

- Vegetation is dominated by an appropriate mix of native or desirable introduced species.
- Vigorous, desirable plants are present.
- There is vegetation with diverse age class structure, appropriate vertical structure, and adequate composition, cover, and density.
- Stream bank vegetation is present and is comprised of species and communities that have root systems capable of withstanding high stream flow events.
- Plant species present indicate maintenance of riparian moisture characteristics.
- Stream is in balance with the water and sediment being supplied by the watershed (e.g., no headcutting, no excessive erosion or deposition).
- Vegetation and free water indicate high water tables.
- Vegetation colonizes point bars with a range of age classes and successional stages.
- An active floodplain is present.
- Residual floodplain vegetation is available to capture and retain sediment and dissipate flood energies.
- Stream channels with size and meander pattern appropriate for the stream's position in the landscape, and parent materials.
- Woody debris contributes to the character of the stream channel morphology.

Standard 3

Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.

Indicators

- Noxious weeds and undesirable species are minimal in the overall plant community.

- Native plant and animal communities are spatially distributed across the landscape with a density, composition, and frequency of species suitable to ensure reproductive capability and sustainability.
- Plants and animals are present in mixed age classes sufficient to sustain recruitment and mortality fluctuations.
- Landscapes exhibit connectivity of habitat or presence of corridors to prevent habitat fragmentation.
- Photosynthetic activity is evident throughout the growing season.
- Diversity and density of plant and animal species are in balance with habitat/landscape potential and exhibit resilience to human activities.
- Appropriate plant litter accumulates and is evenly distributed across the landscape.
- Landscapes composed of several plant communities that may be in a variety of successional stages and patterns.

Standard 4

Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Indicators

- All the indicators associated with the plant and animal communities standard apply.
- There are stable and increasing populations of endemic and protected species in suitable habitat.
- Suitable habitat is available for recovery of endemic and protected species.

Standard 5

The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and anti-degradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303(c) of the Clean Water Act.

Indicators

- Appropriate populations of macroinvertebrates, vertebrates, and algae are present.
- Surface and ground waters only contain substances (e.g. sediment, scum, floating debris, odor, heavy metal precipitates on channel substrate) attributable to humans within the amounts, concentrations, or combinations

as directed by the Water Quality Standards established by the State of Colorado (5 CCR 1002-8).

GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT

Guidelines are the management tools, methods, strategies, and techniques (e.g., BMPs) designed to maintain or achieve healthy public lands as defined by the standards. Currently, the only guidelines for BLM Colorado that have been developed in concert with the Resource Advisory Councils are livestock grazing management guidelines.

1. Grazing management practices promote plant health by providing for one or more of the following:
    - periodic rest or deferment from grazing during critical growth periods;
    - adequate recovery and regrowth periods; and
    - opportunity for seed dissemination and seedling establishment.
2. Grazing management practices address the kind, numbers, and class of livestock, season, duration, distribution, frequency and intensity of grazing use and livestock health.
3. Grazing management practices maintain sufficient residual vegetation on both upland and riparian sites to protect the soil from wind and water erosion, to assist in maintaining appropriate soil infiltration and permeability, and to buffer temperature extremes. In riparian areas, vegetation dissipates energy, captures sediment, recharges ground water, and contributes to stream stability.
4. Native plant species and natural revegetation are emphasized in the support of sustaining ecological functions and site integrity. Where reseeding is required, on land treatment efforts, emphasis will be placed on using native plant species. Seeding of non-native plant species will be considered based on local goals, native seed availability and cost, persistence of non-native plants and annuals and noxious weeds on the site, and composition of non-natives in the seed mix.
5. Range improvement projects are designed consistent with overall ecological functions and processes with minimum adverse impacts on other resources or uses of riparian/wetland and upland sites.
6. Grazing management will occur in a manner that does not encourage the establishment or spread of noxious weeds. In addition to mechanical, chemical, and biological methods of weed control, livestock may be used where feasible as a tool to inhibit or stop the spread of noxious weeds.
7. Natural occurrences such as fire, drought, flooding, and prescribed land treatments should be combined with livestock management practices to move toward the sustainability of biological diversity across the landscape,

including the maintenance, restoration, or enhancement of habitat to promote and assist the recovery and conservation of threatened, endangered, or other special status species, by helping to provide natural vegetation patterns, a mosaic of successional stages, and vegetation corridors, and thus minimizing habitat fragmentation.

8. Colorado Best Management Practices and other scientifically developed practices that enhance land and water quality should be used in the development of activity plans prepared for land use.

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APPENDIX D
KREMMLING FIELD OFFICE CULTURAL RESOURCE BACKGROUND

MIDDLE PARK, COLORADO – PREHISTORY

Middle Park has a long history of Native American occupation and use dating back at least 12,500 years. It is unlikely, however, that it was used extensively or intensively during all time periods. The time periods identified as having the most intensive periods of occupation are the PaleoIndian, the Archaic, the Late Prehistoric and the Protohistoric Ute/Shoshone occupations.

Investigations begun in 1990 by KFO and the University of Wyoming under the direction of Dr. George Frison, Dr. Marcel Kornfeld, Dr. Nicole Waguespack and Dr. Todd Surovell have highlighted a 10 mile area around Kremmling as one of the highest concentrations of **PaleoIndian Era** cultural sites (11,500 to 6400 B.C.) known from North America, with about 65 known sites, and at least 20 additional sites that have not yet been documented. PaleoIndians in Middle Park were primarily occupied with hunting extinct forms of bison using large projectile points attached to spears. Cultural stages represented in Middle Park include Folsom and Plano sites (Goshen, Cody, Hell Gap & James Allen), and include bison kill and processing sites, camps, quarries and lithic tool making locations.

Archaic Era sites (6400-400 B.C.) are numerous in Middle Park and include the Pioneer, Settlement, Transitional and Terminal Periods. Archaic Era sites may represent a shift from a low land, plains occupation to the Rocky Mountains during an extended drought period called the Altithermal. Increasing evidence is suggesting, however, that the climate fluctuated several times during the mid-Holocene period. Archaic age use of the higher elevations may have shifted from a residential pattern of year around occupation to a more mobile pattern of lower elevation winter habitation and seasonal use of the higher elevations.

Evidence from the Archaic Era suggests a transition to a broader resource base utilizing both small and large game animals, and a greater reliance on plant resources. During this period, smaller projectile points than those used in the PaleoIndian Stage were adapted for use with the atlatl.

Early archaic period sites of the Pioneer Period include theYarmony Pit House site, known as the oldest habitation structure in Colorado, dating to 6,200 years ago. Excavation of one of the Yarmony Pit Houses, over a decade ago, suggested a winter occupation and led to the definition of a Mountain Tradition that conforms to a pattern of lower elevation habitation and seasonal use of the higher terrains as plant resources became available in the spring, summer and fall.

For the Archaic Era, adaption by American Indian populations to a fluctuating, but generally warming weather pattern and a changing environment following the last glacial periods allowed the establishment of camps in the higher mountain valleys during intervals of warmer temperatures, and moving to lower elevation winter camps during colder intervals. The Yarmony Site is not located within the boundaries defined as Middle Park proper. There are, however, at least two additional known locations within Middle Park that appear to have potential pit house structures.

Formative Era sites (400 B.C.-A.D. 1300) are represented in Middle Park by the Aspen tradition. The other traditions of the Formative Era are not present in Middle Park (Anasazi, Fremont and Gateway), and include evidence for a more settled life style and a greater reliance on planting crops such as corn, squash and beans in addition to hunting and foraging. Evidence of a more sedentary life style also include use of pottery, basketry, distinctive rock art, rock constructed habitations, pit houses and storage structures.

The **Aspen tradition** (A.D. 1-1300 A.D.) is more closely identified with the mountains where horticulture was not generally possible due to the short growing season. There are suspicions that during the Aspen tradition, the use of tipis, wickiups and other informal rock and brush structures were in use, but have been generally attributed by archaeologists to the other traditions. Much additional work will be necessary to establish a larger data base and a more consistent evaluation of structures and their cultural affiliation.

The **ProtoHistoric Era** (1300 A.D.-1650 A.D.) includes the Canalla and Anterro Phases. The Canalla Phase (1100 A.D.-1650 A.D.) is defined by the appearance of Uncompahgre brown ware ceramics, Desert Side-notched and Cottonwood Triangular projectile point types, wickiups and brush structures, and a lifestyle of pedestrian based hunting and gathering. The Antero Phase (1650 A.D.-1881) continues with the Desert Side-notched and Cottonwood Triangular projectile points and Uncompahgre Brown Ware, but the appearance Euroamerican trade items such as metal projectile points, glass beads, tin cans, rifle and pistol cartridges become

ever ore common. Horse bits and harness hardware provides evidence of the introduction of the horses and the full transition to an equestrian based lifestyle.

A brief summary of the various units used to describe the space/time divisions of prehistoric occupation of the Northern Colorado River Basin is presented in **Table D-1**. Additional research of archaeological sites during all prehistoric time periods is needed to allow archaeologists to better understand and interpret the occupation and use of the mountains and upland parks of Middle Park.

Table D-1
Prehistoric Occupation of the
Northern Colorado River Basin*

Stage	Dates
PALEOINDIAN	11,500-6400 B.C.
Period:	
Clovis	11,500 – 10,500 B.C.
Goshen	11,000 – 10,700 B.C.
Folsom	10,800 – 9,500 B.C.
Foothill-Mountain tradition	9,500 – 6,400 B.C.
ARCHAIC	6400 B.C. – 400 B.C.
Period:	
Pioneer period	6,400 – 4,500 B.C.
Settlement period	4,500 – 2,500 B.C
Transitional	2,500 – 1,000 B.C.
Terminal	1,000 – 400 B.C.
FORMATIVE	400 B.C. – A.D. 1,300
Anasazi tradition	A.D. 900 – 1,100
Fremont tradition	A.D. 200 – 1,500
Gateway tradition	400 B.C – A.D. 1,300
Aspen tradition	A.D. 1 – 1,300
PROTOHISTORIC ERA	A.D. 1,300 – 1881
Canella phase	A.D. 1,100 – 1,650
Antero phase	A.D. 1,650 – 1,881

* Adapted from Reed and Metcalf 1999.

MIDDLE PARK, COLORADO – HISTORY

The historic and a much shorter history of settlement in Middle Park, is divided into ten socio-economic themes reflecting modern historic development of the mountain region.

These themes are somewhat chronological, but overlaps are common and dependant upon the historic properties that have been associated with each theme in various areas of Colorado. All of these themes, with the exception of Mountain Colony Settlements, are represented in varying degrees in Middle Park.

Indian-European American Contact and Conflict (1600-1887) The Ute's, who claimed much of Colorado, had contact with European traders through the Pueblo Indians of New Mexico as early as 1688, almost 50 years prior to Spanish

Expeditions into the Colorado high country. By the late 1600's, Ute's were capturing Paiutes in Utah and trading them as slaves to the Spaniards, as well as deer hides and dried meat The Spaniards had horses, guns and alcohol to trade and the lifestyle of the Ute's was dramatically altered. Trade continued until 1710 when Ute's attacked the Taos Pueblo, and Spanish expedition was sent to the Colorado Mountains to punish the miscreant Indians. Although the expedition failed in its mission, the Spaniards and the Ute's entered into an agreement that allowed Spanish explorers and traders to pass through the mountains and other Ute lands. The Ute's were otherwise occupied from 1820 to 1860 with incursions into the mountains by Cheyenne and Arapaho who had established lands on the eastern plains. After the Gold Rush of 1859, Ute occupancy was being challenged by miners and settlers.

The Ute's land rights were recognized by the Calhoun treaty with the US Government in 1849. The Evans and Brunot treaties that followed pushed the Ute's onto ever smaller land tracts and eventually established two Ute Agencies at Los Pinos and White River, and relegated the Ute's to the western 1/3 of the Colorado Territory. The Meeker Massacre in 1979 was the last straw for the citizens of Colorado and the Ute's were removed from the Colorado Mountains to Utah in 1881. Today, the majority of Native Americans in Colorado do not live on reservations, but many Ute's keep close family ties to the two reservations in southern Colorado at Towoac and Ignacio, and at Fort Duchesne in Utah.

Early Exploration and the Fur Trade (1761-1859) Middle park is believed to have been explored as early as 1820 by trappers, but little development or homestead ranching occurred until the 1860's. In June of 1844, Captain John C. Fremont returning from an extensive, government sponsored expedition of the west traversed through Middle Park entering from the north at Muddy Pass and exiting through the south along the Blue River. Middle Park was then located in the Republic of Texas

Post 1859 Exploration (1859-1925) Later, Dr. Ferdinand Vandiver Hayden made an extensive inventory of Middle Park beginning in July 1869, with major work accomplished in 1973 and completed in 1874. His work was noted for its thoroughness, "a labor of love", wherein he recognized the geologic complexity of Middle Park when compared to the other "parks" of Colorado. The first ever scientifically collected fossil dinosaur bone was collected by the Hayden Expedition in Middle Park. Other government sponsored expeditions included those by Clarence King and later the photographic expeditions of William Henry Jackson, well known for his photos of the west and Native Americans.

Gold Rush and the Placer Mining Frontier (1858-1858); Precious Metal Mining as and Industry (1860-1920); The technology of Mining in Colorado's Mountains (1859-1900); Coal Mining (1870-1930); Lead, Zinc and other Mining (1860-1945) Middle Park was explored in the mining rush beginning in 1859, but precious metals were not abundant in Middle Park. Exploration and limited development appears to have been limited to localized copper lode deposits. The rich, native hay grass that was abundant in Middle Park supported large populations

of deer, elk and antelope and provided an opportunity to export these commodities to the nearby mining districts to feed the hungry mining populous. Coal mining did occur in small amounts but this was not an abundant resource and it was mostly used locally, or transported to the nearby mining towns of Breckenridge and Steamboat Springs.

Early Transportation (1859-1913) Economic development was dependent upon the development of transportation in the form of early stage toll roads to connect to the developing metropolis of Denver and the Front Range. Because of the precarious travel routes and long distances, travelers required over night accommodations and early ranches provided this service and became post offices as well.

These developing routes often followed old Indian trails and the topographical constraints of the mountains and the available low mountain passes.

Railroads in the High Country (1853-1934) Railroads were very important to the development of the West, and Middle Park was no exception. Engineers were charged with finding practical routes into the mountains. Surveys completed by Captain John H. Gunnison and reported as early 1853, clearly indicated that finding railroad routes into the mountains would require enormous amounts of funding and innovative engineering to find suitable passes, and the construction of tunnels and snow sheds to allow operation during winter months. Companies were formed and financing procured to build routes to the mining towns during the first fifteen years following the gold rush. A large number of ethnic groups provided the sweat and labor to lay the rail lines and supporting infrastructure. Railroad Companies included the Denver, South Park and Pacific and its predecessors; the Crystal River and San Juan and its predecessors; the Colorado Midland; and the Florence and Cripple Creek. The most famous was, however, the Denver Rio Grande and Western. This was William Jackson Palmer's railroad and he successfully constructed the Moffat Tunnel and brought the railroad to Middle Park and beyond.

High Country Logging (1859-1945) Mining and railroading were essential to the creation of the lumbering industry, both consuming large quantities of logs, cut lumber, and charcoal for running boilers and refineries to support the mining industry. The industry dates to the gold rush of 1859 and was unregulated until establishment of the federal timber reserves in the late 1900's. By the 1880's lumbering was in decline due to early harvesting of the easily accessible timber and the establishment of federal timber reserves. Logging continued through the twentieth century, and continues today.

High Country Farming and Ranching (1859-1945) High country farming and ranching began throughout Colorado in the 1860's as miners and prospectors found little gold and silver, and turned back to their heritage, and experience of farming and ranching learned on mid-western and southern farms. The livestock industry was shown to be viable, and both farming and ranching proved successful enterprises as there were willing consumers in the nearby mining camps. Cattle ranching, as well as

sheep production were important to the all of the intermountain parks of Colorado, including Middle Park.

Mountain Colony Settlements (1869-1884) Establishment of Mountain Colony settlements was apparently not a feature of the settlement of Middle Park, at least in part because colony settlements were organized as agricultural endeavors as opposed to ranching enterprises.

Recreation, Tourism, Roots and Development (1865-1945) Recreation and tourism has been a long time feature of Middle Park. Scenery, climate and recreation were sought out by "easterners" hoping to see the last of the "Wild West". People began vacationing in Middle Park as early as the 1870's, and included people trying to improve their respiratory and other health problems. Hot springs and spas like Glenwood Springs, Steamboat Spring and Hot Sulphur Springs in Middle Park were favored destinations. Other locations built lodges and cabins to provide hunting and fishing opportunities. Transportation by rail was once again critical to the development of Middle Park, but by the 1920's the automobile and improved roads were challenging the rail roads for the tourist dollar. New facilities were developed for the auto tourist including camping parks, motor hotels, roadside parks and picnic areas. The Great Depression severely decreased "pleasure travel", throughout the 1930-1940's due to economic problems and government war time restrictions, resuming again after the end of WWII.

Automobiles and Their Impacts (1890-1945) Automobile ownership and travel were strongly linked to improvement of State Highways started by the Good Roads Movement. Begun in the eastern US in the 1890's by bicyclists and later by motorists, these groups promoted and lobbied county and state governments to build and improve the roads. The Colorado mountains were among the first areas to receive federal road building dollars after designation of the Trans-Continental Highway. This route closely follows I-70 through the mountains. By 1945 nearly every town in Colorado had an improved highway and the automobile had replaced animal powered wagons. Much of the road improvement work was completed by convict laborers and federal work programs. The arrival of service stations and auto dealerships also marked the beginning of the "auto culture".

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Colorado livestock producers were amongst the most vocal in resisting federal control, but by 1911 the control of the federal lands had been established in the courts and the USFS began to work towards improving range lands and timber stands. New agencies came into being including the NPS, the Bureau of Reclamation and eventually the BLM as part of a push for conservation and preservation. Other new agencies, the Weather Bureau and the Soil Conservation Service came about as part of President Franklin D. Roosevelt's New Deal program of the 1930's. These agencies continue to be an important part of Middle Park today.

The Great Depression and World War II (1920-1945) The Great Depression, a period following the stock market crash of 1929, is generally viewed as an economic downturn, and the ranching, farming and mining industries were severely depressed. Programs started under the presidency of Frank D. Roosevelt, were however, able to help Colorado reduce unemployment and foster federally sponsored public works projects. Under the New Deal, four agencies were responsible for these projects: the Public Works Administration, the Civil Works Administration, the Works Progress Administration and the Civilian Conservation Corps.

All of these agencies played a part in building and improving roads, building sewer and water treatment facilities, constructing trails and recreation facilities and working on range and forestry improvement projects. These programs not only helped the local economy during the 1930's, but undertook public projects that towns and counties could not afford to build.

It was WWII, however, that brought back prosperity to Colorado. But, it was recognized that the prosperity would be short lived and everyone looked forward to the end of the war, and peace. Several prisoner of war camps were located in Colorado for both Japanese and German prisoners, who were "loaned" out to farmers and ranchers as laborers. Japanese workers are known to have worked on ranches and logging camps in Middle Park. An ice cutting plant manned by German war prisoners and consisting of canals to divert water from the Colorado River to ponds in the winter, and storage buildings provided ice year around for cooling produce on the Denver Rio Grande Western railroad. The remains of the canals, the ponds and the foundation of the storage building are located at the mouth of Gore Canyon just west of the Wolford Travel Management Study Area.

Socio Cultural Developments (1860-1945) The final historic theme identified is that of Socio-Economic Developments. For Middle Park and elsewhere in Colorado, there was no single pervasive socio-cultural system. The influx of people from all over the US, and the rapid rate of communication and travel served to make Colorado's population a diverse mix of heritage and cultures.

Development in the high country was closely tied to the development of towns. The populations were none-the-less was predominated by a male Anglo-American population which early on supported a great number of saloons with alcohol, gambling and prostitution as a social center and meeting place for the working class

men. Not until WWI and the passage of prohibition did this change. Towns were the focus of socio-cultural development and local leaders worked to bring "culture" to their community by bringing in traveling actors and musicians, or by purchasing musical instruments for local musicians. Communication in the form of newspapers and telegraph, and later the telephone and radio were instrumental in keeping the rural high country in touch with the rest of the world.

NORTH PARK AND LARAMIE RIVER VALLEY, COLORADO – PREHISTORY

North Park has been more or less continuously occupied by human populations for over 12,000 years. It is unlikely, however, that it was used extensively or intensively during all time periods. The time periods identified as having the most intensive periods of occupation are the Middle and Late Archaic, the Late Prehistoric and the Protohistoric Ute/Shoshone occupations. Refer to **Table D-2**.

Table D-2
Cultural Time Periods for the Platte River Basin
(also adapted to the Laramie River Valley)*

Stage	Dates
PALEOINDIAN	12,040 – 5,740 B.C.
Period:	
Clovis	12,040 – 9,750 B.C.
Folsom	11,340 – 8,720 B.C.
Plano	10,850 – 5,740 B.C.
ARCHAIC	5,500 B.C. – A.D. 150
Period:	
Early Archaic	5,500 – 3,000 B.C.
Middle Archaic	3,000 – 1,000 B.C
Late Archaic	1,000 – A.D. 150
LATE PREHISTORIC	A.D. 150 – 1,540
Period:	
Early Ceramic	A.D. 150 – 1,150
Middle Ceramic	A.D. 1,150 – 1,540
PROTOHISTORIC	A.D. 1,540 – 1,860

** Adapted from Gilmore et al. 1999.

The **PaleoIndian Stage** is characterized by hunting subsistence of now-extinct megafauna such as bison and mammoth. The PaleoIndian stage is divided into four periods defined by changes in projectile point styles and technology or method of manufacture. The four periods are the Clovis, the Goshen, the Folsom and the Plano.

The Clovis period is defined by the use of large, fluted lanceolate projectile points hafted to spears, and reliance on the hunting of mammoth. There are no known Clovis sites in North Park.

The Goshen period is defined by an intermediate lanceolate projectile point that is morphologically similar to Clovis points, but utilizes platform preparation and isolation, faceting and edge grinding during manufacture, a process that is more similar to Folsom projectile point and tool production. Goshen points do not exhibit channel flake removal. The hunting of now extinct forms of bison was the primary hunting occupation.

The Folsom period overlaps the Clovis and Goshen cultural time periods, and the Pleistocene and Holocene geologic time periods. It is as a period of human change and adaptation to an environment converting from a glacial/post glacial environment to one that is more similar to our modern environment. Some of the large megafauna were now extinct, so Folsom age people were now primarily occupied with hunting an extinct form of bison, (Bison Antiquous). The Folsom projectile point is both lighter and smaller than the Clovis point. It is leaf shaped in morphological appearance, and exhibits a refined technology resulting in a better made tool. Often the base has a characteristic concave appearance with two rearward projections. Broad grooves were often fluted bilaterally and are distinctive to the Folsom period.

The Plano period encompasses a number of cultural complexes including Hell Gap, Agate Basin, Cody, Firsts View and Kersey. The Plano period is characterized by a diversity of large, unfluted projectile point styles and greater reliance on a variety of large and small game and plant resources.

Prehistoric Indians during the **archaic period** appear to have been highly mobile utilizing a hunting/foraging strategy of seasonal rounds between uplands and lowlands to exploit floral and faunal resources as they came into season. Research in Middle Park suggests that early archaic groups and possibly other cultural groups were utilizing the resources and occupying the Park on a year around basis (Black, 1991). A competing theory, the Grand Circuit, suggests seasonal migrations by cultural groups based at low altitude along the Front Range foothills east of the Continental Divide during the winter months with spring through fall migrations north into the Laramie River Valley, then west across the Medicine Bow Mountains to North Park. As the summer peaked and waned, the nomadic groups would continue south across Muddy Pass and into Middle Park. By late summer they would begin moving east towards high mountain passes along the Continental Divide, where they had established game blinds and drives for communal hunting of large game animals, especially big horn sheep. The end of the migrational round would return them to the eastern foot hills for the winter months (Benedict, 1990).

Archaic age sites are numerous in the inter mountain basins of Colorado and may reflect a shift from a low land plains occupation into the mountains during an extended drought period called the Altithermal. Increasing evidence is suggesting, however, that the climate fluctuated several times during the mid-Holocene period. Archaic age use of the higher elevations may have shifted from a residential pattern

of year around occupation to a more mobile pattern of lower elevation winter habitation and seasonal use of the higher elevations.

The Archaic era also suggests a move to a broader based spectrum hunting and foraging strategy, utilizing both small and large game animals, and floral resources. During this period, smaller projectile points than those used in the PaleoIndian Stage were adapted for use with the atlatl.

The **Late Prehistoric Stage** in many ways represents a continuation of settlement and subsistence patterns that are little changed from the preceding Archaic Period. Small corner and side notched projectile points clearly mark a change in technological adaption as hunting weaponry changed from reliance on the atlatl to the use of the bow and arrow. Ceramic technology is also a characteristic of the Late Prehistoric Stage, but is a more localized phenomenon than the wide use distribution of the bow and arrow. The Early, Middle and Late ceramic periods are largely defined and restrained to the Central and Western Plains, and a greater reliance on domesticated plants and food production.

On the plains, this change also marks a gradual shift away from life in small nomadic groups to a life of grouped concentrations and the establishment of more permanent housing in the form of pit houses and villages, where the aboriginal populations spent the majority of their time. For the North Platte River Basin, these changes or lifeway expressions are considerably less noticeable as the upper mountain and mountain basin elevations limited horticultural potential.

The **ProtoHistoric Stage** marks first contact with European explorers either by direct contact, or through secondary exchange of European goods that were traded by aboriginal peoples beyond the original direct contact. The first records of Native American contact dates to the Spanish explorations of Coronado in 1540, and continued for another 300 years as trappers, travelers and traders searched for natural resources to exploit. For the North Platte River Basin, the first permanent records of aboriginal contact dates to the 1850's as gold and silver is discovered in Colorado, and shortly thereafter by early ranching homesteaders. The Ute's controlled the western half of Colorado at this time, but the abundant big game resources of North Park attracted Shoshone, Arapaho and other plains oriented cultural groups. The Ute's utilized wickiups and hide covered tipis as nomadic habitation. Contact with the Spanish colonies of New Mexico introduced the Ute's to the horse cultural. Following the Pueblo Revolt of 1680, the Ute's are believed to have been instrumental in the distribution of the horse into Colorado, then north into Wyoming. Repeated incursion into Ute Territory by gold miners and early homesteaders led to armed battles and broken treaties. Following the Meeker Massacre of 1879 the Ute's were forcibly removed to three Indian Reservations in 1881. Originally divided into seven loosely related groups, the Ute today are divided into the three groups, the Southern Ute, the Ute Mountain Ute and Northern Ute based on their assignment to a specific reservation. Today, the majority of Native Americans in Colorado do not live on reservations, but many Ute's keep close family

ties to the two reservations in southern Colorado at Towoac and Ignacio, and at Fort Duchesne in Utah.

NORTH PARK AND LARAMIE RIVER VALLEY, COLORADO – HISTORY

The **Historic Archaeological Period**, and much shorter history of settlement in North Park, is divided into ten socio-economic themes reflecting modern historic development of the mountain region. These themes are somewhat chronological, but overlaps are common and dependant upon the historic properties that have been associated with each theme in various areas of Colorado. All of these themes, with the exception of Mountain Colony Settlements, are important in varying degrees to North Park.

Indian-European American Contact and Conflict (1600-1887) The Ute's, who claimed much of Colorado, had contact with European traders through the Pueblo Indians of New Mexico as early as 1688, nearly 50 years prior to Spanish Expeditions into the Colorado high country. By the late 1600's, Ute's were capturing Paiutes in Utah and trading them as slaves to the Spaniards, as well as deer hides and dried meat The Spaniards had horses, guns and alcohol to trade and the lifestyle of the Ute's was dramatically altered.

Trade continued until 1710, when Ute's attacked the Taos Pueblo. A Spanish expedition was organized and sent to the Colorado Mountains to punish the Indians. Although the expedition failed in its mission, the Spaniards and the Ute's entered into an agreement that allowed Spanish explorers and traders to pass through the mountains and other Ute lands. The Ute's were occupied from 1820 to 1860 with incursions into the mountains by Cheyenne and Arapaho Indians who had established themselves on the eastern plains. Following the Gold Rush of 1859, Ute occupancy was being challenged by miners and settlers. The Ute's land rights were recognized by the Calhoun treaty with the US Government in 1849. The Evans and Brunot treaties that followed pushed the Ute's onto ever smaller land tracts. Two Ute Agencies were established at Los Pinos and White River, and the Ute's were limited to the western 1/3 of the Colorado Territory. The Meeker Massacre in 1979 was the last straw for the citizens of Colorado and the Ute's were removed from the Colorado Mountains to reservations in Utah and Colorado in 1881.

Early Exploration and the Fur Trade (1761-1859) North park is believed to have been explored as early as 1820 by trappers, but little development or homestead ranching occurred until the 1860's. In 1844, Captain John C. Fremont, leading his second expedition to the west, traveled through North Park, noting, as have later explorers and settlers, that the Park has an abundance of grass and wild game.

Post 1859 Exploration (1859-1925) Later, Dr. Ferdinand Vandiver Hayden made an extensive inventory of North Park beginning in July 1869, with major work accomplished in 1873 and completed in 1874. His work was noted for its thoroughness, "a labor of love". Other government sponsored expeditions included

those by Clarence King and later the photographic expeditions of William Henry Jackson, well known for his photos of the west and Native Americans.

Gold Rush and the Placer Mining Frontier (1858-1858); Precious Metal Mining as and Industry (1860-1920); The technology of Mining in Colorado's Mountains (1859-1900); Coal Mining (1870-1930); Lead, Zinc and other Mining (1860-1945) North Park was explored during the mining rush that began in 1859, but precious metals were not abundant in North Park. Placer gold mines were established on Independence Mountain and actively mined until the turn of the century.

Copper and minor amounts of gold and silver were discovered in the Big Creek Park area in 1900, with several mines staked and recorded. The town of Pearl was established in 1901, and construction of a nearby smelter to refine the ores was begun. The smelter was nearly complete in 1905, but transportation and other costs made the facility too expensive to operate. The smelter was never completed and all mining was abandoned in 1908.

Teller City was a short lived boom town that sprung up upon discovery of silver ores along Jack Creek in 1879.

Laramie, Wyoming and Grand Lake, Colorado were the two nearest supply towns. The town's population peaked at about 1300 citizens in 1882. The ores quickly played out and by 1885 Teller was abandoned. The town Post Office closed in 1886.

The rich, native hay grass that was abundant in North Park supported large populations of deer, elk, bear, big horn sheep and antelope. As early as 1880 a deer and elk meat industry developed in North Park, providing homesteaders an opportunity to sell or trade these native commodities to the nearby mining districts to feed the hungry miners.

Coal is abundant in North Park and lies near the surface. Coal mining began in 1885, but for a lack of transportation, was used only to supply local ranches and the town of Walden. Later, coal was trucked and railed out of North Park as highways and a railroad were constructed.

Fluorspar was discovered in the north part of the Park in the early 1900's, and at the time was believed to be one of the largest deposits of fluorspar in the western US. Fluorspar prospecting was active through out the Park Range during the 1920's. The Colorado Fluorspar Corporation was established by M.P. Cloonan in 1925. Fluorspar mining continued in North Park through the war years, but the major workings and mill site located at the very north end of North Park were abandoned by the early 1950's.

Oil and natural gas were discovered and developed in the 1920's. Oil and gas, and CO2 continue to be produced. Recently there have been a few wildcat wells drilled

on private lands to research the potential for development of natural gas from coal gasification.

Early Transportation (1859-1913) Economic development was dependent upon the development of transportation and came in the form of early stage and freight roads to connect to the developing metropolis of Laramie, and the Front Range. Because of the precarious travel routes and long distances, travelers required over night accommodations and early ranches provided this service and became post offices as well. These developing routes often followed old Indian trails due to physical constraints of the mountains and the available low mountain passes.

Railroads in the High Country (1853-1934) Railroads were critically important to the development of Colorado. Engineers were charged with finding practical routes into the mountains. Companies were formed and financing procured to build routes to the mining towns during the first fifteen years following the gold rush. A large number of ethnic groups provided the sweat and labor to lay the rail lines and supporting infrastructure.

Until 1913, North Park was served only by freight wagon and stage coach. North Park did not have train transportation until 1911 when the Laramie, Hahn's Peak and Pacific Railroad was built connecting Laramie, Wyoming with Walden, Colorado. Later the rail road was extended to Coalmont to tap the coal resources. The railroad hoped that coal and copper mining around Pearl, would provide operational funding, but none of these resources proved to be of lasting value. Only cattle and general freight provided continuing revenues.

The railroad struggled with on-going financial problems and underwent numerous name changes and ownership. In 1951, Union Pacific bought the railroad, and removed the tracks between Walden and Coalmont. Service continued on a seasonal, excursion train basis to Walden until the mid 1990's when military fluorspar stock piles were removed from North Park and taken to Wyoming. The rails between Laramie and Walden were pulled up in the mid 1990's, and there are currently no plans to resume a railroad connection from Wyoming into North Park.

High Country Logging (1859-1945) Mining and railroading were essential to the creation of the lumbering industry, consuming large quantities of logs and cut lumber, and charcoal for running boilers and refineries to support the mining industry. The logging industry dates to the gold rush of 1859 and was unregulated until establishment of the federal timber reserves in the late 1900's. The town of Gould was begun as a logging enterprise with small dispersed cutting camps and two saw mills. By the 1880's, lumbering was in decline due to early harvesting of the easily accessible timber and the establishment of federal timber reserves. Logging continued through the twentieth century, and continues today.

High Country Farming and Ranching (1859-1945) High country farming and ranching began throughout Colorado in the 1860's as most miners and prospectors

found little gold and silver. These early prospectors turned back to their heritage, and experience of farming and ranching learned on mid-western and southern farms. The livestock industry was shown to be viable and by 1870 cattlemen were driving livestock into North Park from Wyoming. Belief that cattle could not survive the harsh winters of North Park meant that cattle were driven out of North Park in the fall. A series of moderate winters in the early 1880's led ranchers to try over wintering in the Park. But a return to a more normal and severe climate in 1883-1884 and again in 1887 resulted in an enormous loss of livestock. Ranchers learned to put up wild grass hay and began clearing sagebrush to allow for more hay production. After 1890, winter hay feeding of livestock and over wintering became a common practice. Cattle ranching, as well as sheep production were important to the all of the intermountain parks of Colorado, including North Park. North Park hay became famous for its high quality and after the railroad was built, tons of hay were sold to Denver and other "eastern" cities.

Mountain Colony Settlements (1869-1884) Establishment of Mountain Colony settlements was apparently not a feature in the settlement of North Park, at least in part because colony settlements were largely organized as agricultural endeavors, rather than ranching enterprises.

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over the US, and the rapid rate of communication and travel, made Colorado's population a diverse mix of heritage and cultures.

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APPENDIX E
KREMMLING FIELD OFFICE GEOLOGIC UNITS AND SENSITIVITY RANKINGS

The following are geologic formations and some members as listed on the Tweto 1979 Geologic Map of Colorado for the KFO. The PFYC and Condition sensitivity classification rankings for paleontological resources are determined from several sources, including published and unpublished files, from some paleontologists knowledgeable about the area, from Frank Rupp and John Morrone's BLM work and knowledge of the fossils of the area, and from input from Harley Armstrong, BLM Regional Paleontologist for Colorado:

FOSSILS AND FORMATIONS

Kremmling Field Office

The geology of the KFO spans a time of roughly 1.8 billion years. From youngest to oldest, the following is a list of major rock units and some of the fossils that have been found in the KFO:

Q, Quaternary - Sharks teeth and other petrified sea and lake life (redeposited?), horse, large bovid, and gastropods (snails)

Condition 2

Qa, Modern Alluvium - None known

Condition 3

Qg, Gravels and Alluviums (Pinedale and Bull Lake Age) - (Same as Quaternary)

Condition 2

Qgo, Older Gravels and Alluviums - None known

Condition 2

Qe, Eolian Deposits - None known

Condition 2

Qd, Glacial Drift of Pinedale and Bull Lake Glaciations - None known

Condition 2

Qdo, Older Glacial Drift - None known

Condition 2

Ql, Landslide Deposits - None known

PFYC 3; Condition 2

Qb, Basalt Flows (Age <1.8 m.y.) - None known

Condition 3

Td, Dry Union - Mammals, rodents, and other vertebrates

Condition 2

Tgv, Bouldery Gravel on Old Erosion Surfaces in Front Range -

None known

Condition 2

Tbb, Basalt Flows and Associated Tuff, Breccia and Conglomerate -

None known

Condition 3

Tv, Volcanic Rocks in Northwestern Colorado (Age <7-33 m.y.) -

None known

Condition 3

Tbp, Browns Park - None known

Condition 1

Tt, Troublesome - Mammals, including rodents such as squirrels, rabbits, horned gophers, and horses, camels, artiodactyls, oreodonts, and coprolite with fossil rodents skull, cats, insects, and fossil hackberry seeds

Condition 1

Tnp, North Park - Mammals, including horses

Condition 1

Taf, Ash Flow Tuff of Main Volcanic Sequence - None known

Condition 3

Twr, White River - Mammals, including perissodactyls (horses), brontotheres, rodents (squirrels), reptiles, and amphibians

Condition 1

Tmi, Middle Tertiary Intrusive Rocks (Age <20 m.y.) - None known

Condition 3

TKi, Laramide Intrusive Rocks (Age 40-72 m.y.) - None known

Condition 3

Tc, Coalmont - Fish, fresh water fish, fishbones and scales, beetles and other insects, plant remans, pollen and spores, leaf and seed pod imprints, seams of coal, but no petrified wood or fossil logs are known.

Condition 2

Tm, Middle Park Formation, Windy Gap Member - Plants

Condition 2

Mz, Mesozoic Rocks - Various

Condition 2

MzPz, Mesozoic and Paleozoic Rocks - Various

Condition 2

Kp, Pierre Shale, Undivided - Ammonites, baculites, nautilus, bivalves, clams, gastropods, mosasaurs, marine reptiles, scaphites, baculites, and oysters

Condition 2

Kc, Colorado Group - Niobrara Formation, Benton Shale, and Graneros Formations - Various

Condition 2

Kn, Niobrara - Clams and oysters, fish scales, marine reptiles, mosasaurs, and ichthyosaurs

Condition 2

Kc, Benton Shale - Clams, scaphites, baculites, and oysters

Condition 2

Kcg, Kc, Kpg, Graneros - Forams

Condition 2

Kdp, Kd, Dakota Sandstone - Dinosaur bones and tracks

Condition 2

Kdp, Purgatoire - None known

Condition 2

Jm, Jmr, Jme, Jms, Jmre, Morrison - Allosaurus and other dinosaur bones

Condition 1

Jmr, Jmre, Ralston Creek - None known

Condition 2

Jme, Jmse, Jmce, Entrada Sandstone - None known

Condition 2

Jms Sundance - Ammonites, belemnites, and oysters

Condition 2

TRcc TRc, TRPcs, TRPcp, Chinle - None known

Condition 1

TRPs, State Bridge - Brachiopods, vertebrates

Condition 2

TRPjs, Jelm - None known

Condition 2

TRPl, Lykins - None known

Condition 2

TRch, TRcc, Chugwater - Fossil plants

Condition 2

TRPjs, TRPennlf, Lyons - None known

Condition 2

TRPjs, Satanka - None known

Condition 2

TRPr, Triassic and Permian Rocks - Various

Condition 2

PPennm, PPennwm Maroon - None known

Condition 2

Pennmb, Pennmbe Minturn - scientific invertebrates, shark teeth, and also conifer fossils

Condition 2

PPenncf, Casper - None known

Condition 2

TRPennlf, PPennf, PPenncf, PPennif, Fountain Formation, Lower Part - None known

Condition 2

MCamb, MDO, MD, MDCamb, MdCamb, Leadville Limestone - "Algal" layers and mixed invertebrate skeletal packstones from an intertidal environment

Condition 2

MCamb, MDO, DOCamb, Williams Canyon Limestone - None known

Condition 2

MD, MDCamb, Gilman - None known

Condition 2

MD, MDCamb Dyer - None known

Condition 2

MD, MDCamb, DO Parting - None known

Condition 2

DOCamb, OCamb, Manitou Limestone - None known

Condition 2

MDCamb, Cambs, Sawatch Quartzite - None known

Condition 2

Xb, Biotitic Gneiss, Schist, and Migmatite (Age 1700 - 1800 m.y.) - None known

Condition 3

Xfh, Felsic and Hornblendic Gneisses - None known

Condition 3

Yg, Granitic Rocks of 1400 m.y. Age Group - None known

Condition 3

YXg, Granitic Rocks of 1700 Age m.y. - None known

Condition 3

Xm, Mafic Rocks of 1700 m.y. Age Group - None known

Condition 3

APPENDIX F
KREMMLING FIELD OFFICE SYSTEM ROADS AND MAINTENANCE LEVELS

BLM Route Number	BLM Route Name	Miles	Maintenance Level	Maintenance Responsibility
2513	Parson's Draw	2.320	2	BLM
2754	FY 2007	3.277	2	BLM
2753	Windy Gap	5.376	2	BLM
2764	Sheriff Creek	3.353	3	BLM
2771	Spruce Creek Spur2	0.680	3	BLM
2761	Pumphouse	1.540	5	Other
2750	Dice Hill	5.087	3	BLM
2769	Behler Creek Road	1.164	2	BLM
2751	Strawberry	8.467	3	BLM
2762	Smith Mesa Lower	2.226	3	BLM
2760	Hogback	2.481	2	BLM
2768	McQueary Loop	1.934	3	BLM
2758	Fox Loop	5.493	3	BLM
2756	McQueary Creek	4.147	3	BLM
2763	Round Gulch	0.745	2	BLM
2755	Kinney Creek	5.581	3	BLM
2759	Smith Mesa	12.036	3	BLM
2757	Black Mountain	9.157	3	BLM
2510	Three Mile Creek	2.703	3	BLM
2508	Buffalo Peak	3.334	3	BLM
2503	West Independence Mountain	6.139	3	BLM
2507	Buffalo Peak Lower	3.723	3	BLM
2506	Owl Mountain	4.602	3	BLM
2504	Independence Mountain	14.108	3	BLM
2505	Bull Mountain	8.261	3	BLM
2770	Spruce Creek Spur1	0.560	3	BLM
2767	Spruce Creek	2.692	3	BLM
2764	Sheriff Creek	3.353	3	BLM

BLM Route Number	BLM Route Name	Miles	Maintenance Level	Maintenance Responsibility
2765	Hurd Peak	2.011	3	BLM
2502	Owl Mountain Spur	2.589	3	BLM
2512	Big Creek	2.617	3	BLM
2509	North Sand Hills	2.841	3	Other
2752	Reed Creek	5.514	2	BLM
2511	Mitchell Placer	1.390	3	BLM

APPENDIX G
MAPS

This appendix contains the following maps:

1 Reference Map
2 Land Status
3 Management Units
4 Fire Zones
5 Class I (Air Quality) Federal Land Areas
6 Soils with a K-Factor of 0.32 or Greater
7 Watersheds
8 Hydrologic Features
9 Ecological Provinces
10 General Vegetation Zones
11 Beetle Kill
12 Elk Range
13 Mule Deer Range
14 Pronghorn Range
15 Moose Range
16 Bighorn Sheep
17 Black Bear Range
18 Mountain Lion Range
19 White-tail Prairie Dogs
20 Greater Sage-grouse

21 River Otter Range

22 Paleontological Map (Missing)

23 Visual Resource Management Areas

24 Oil and Gas Leases as of May 2007

25 Livestock Grazing Allotments

26 Special Recreation Management Areas

27 OHV Designations

28 Utility Corridors

29 Transportation Routes

30 Maintained Roads

31 Wind Energy Potential

32 Special Management Area Designations

33 Wilderness Study Areas

34 Wild and Scenic Rivers Eligible Segment