

Human Dimension Components

1.1 Roadless

Area of Analysis

Area of evaluation is the GMUG National Forest.

Condition and Trend

Roadless areas on the GMUG National Forest were initially identified from the RARE I and RARE II processes for the purpose of evaluating lands suitable for designation into the National Wilderness Preservation System (NWPS). Since that time, some of the lands have received Congressional designations (35 percent), some lands have been roaded and vegetatively manipulated (ten percent), and over half (56 percent) still retain their roadless character.

Today, roadless lands are valued beyond their potential as Wilderness. They contribute to wildlife habitat needs, migration corridors, and/or provide recreation opportunities that can not be obtained within wilderness or within roaded lands.

During RARE II, 53 roadless areas were inventoried and evaluated on the Forest. These areas comprised approximately 1,530,700 acres. The Colorado Wilderness Act of 1980, (Public Law 96-560), designated 412,418 of those acres into the National Wilderness Preservation System. In 1993, Public Law 103-77 designated an additional 52,495 acres into the NWPS, Fossil Ridge Wilderness, 33,060 acres; Powderhorn Wilderness, 13,935 acres; and Oh-be-joyful Raggeds Wilderness, 5500 acres. Another 28,665 acres (Roubideau Area 19,600 acres and Tabeguache Area 9,065 acres) were designated in Public Law 103-77 to be managed for their wilderness character. And an additional 43,900 acres were Congressionally set aside as the Fossil Ridge Recreation Management Area (See Table 1.1.A.). Of the 1,068,000 acres remaining without a designation, approximately 853,100 acres are currently inventoried as roadless (Figure 1.1.A.). A summary of the 2005 Roadless Inventory and Evaluation” is found in Appendix A.

Table 1.1.A. History and Disposition of Roadless Acres on the GMUG NF.

Year	Acres	Description
1977	1,530,700*	RARE II acreage listed in RARE II FEIS ¹
1980	412,418	Acres designated Wilderness – Public Law 96-560 ²
1993	52,495	Acres designated Wilderness – Public Law 103-77 ²
1993	28,665	Acres designated as Area – Public Law 103-77 ²
1993	43,900	Acres designated as Fossil Ridge RMA – P.L. 103-77 ²
2001	1,068,000**	RARE II acres remaining without a Congressional designation
2005	853,100	Acres included in 2005 Roadless Inventory ³

¹ Source: RARE II FEIS, acres calculated by planimeter.

² Source: USDA Land Areas of the National Forest System, Sept 2004

³ Source: GIS coverage GMUG RARE II calculated electronically.

⁴ Source: GIS calculated acres.

* This figure was hand-calculated using planimeters; thus, the accuracy of this figure is unreliable.

** This figure is generated electronically by GIS mapping and will not mathematically match figures subtracted from the 1977 acreage.

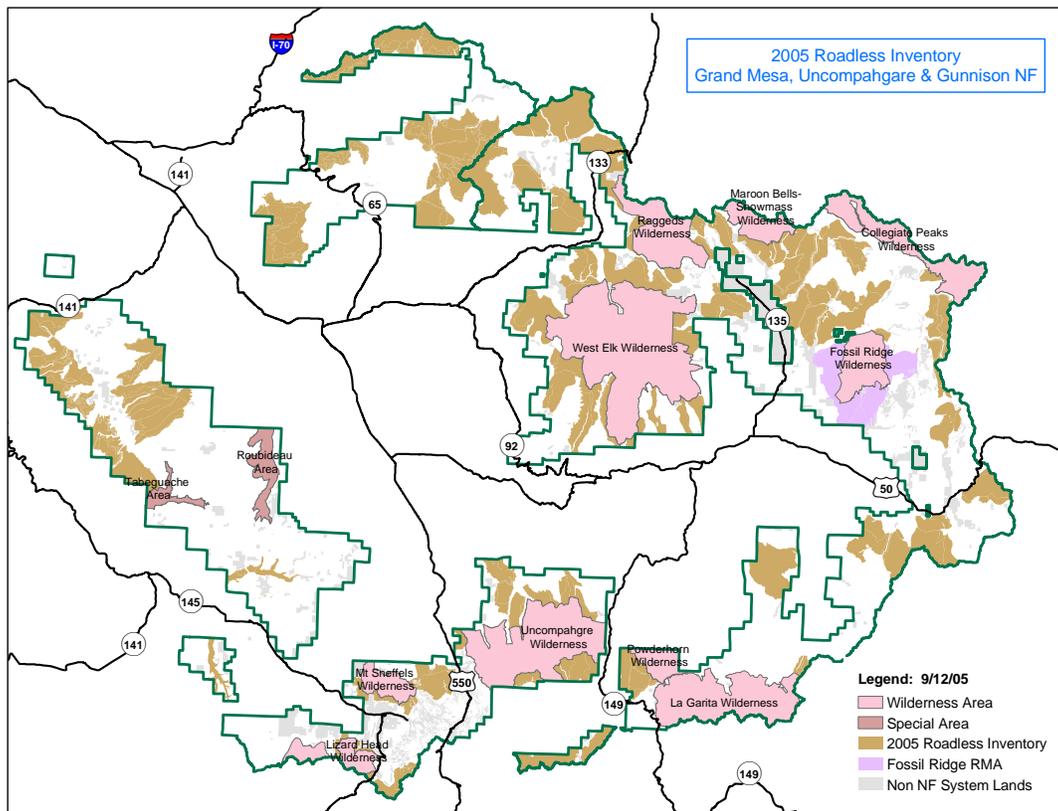


Figure 1.1.A. 2005 Roadless Inventory for the GMUG NF.

Desired Conditions

Selected roadless areas are managed for their semi-primitive recreation opportunities, contributions to wildlife habitat, and biological diversity. Others are managed for the protection of the wildland-urban interface and forest health. Where roadless lands have a high potential for natural gas and oil resources, lands are managed for those minerals while maintaining as much roadless character of the landscape as possible. Areas are natural appearing with little or no evidence of recent human-caused disturbance. Management activities are designed to maintain or enhance biological diversity and to preserve the habitat of native species of plants and animals, especially threatened, endangered, and sensitive species. For the most part, the landscape areas appear natural.

Opportunities for semi-primitive recreation are provided with moderate-to-high degrees of solitude and challenge within either motorized or non-motorized settings. Non-motorized settings provide challenging hiking, horseback riding, cross-country skiing, snowshoeing, or mountain biking opportunities. No discretionary road building occurs within these areas.

Semi-primitive motorized settings provide varied levels of difficulty on motorized trails. Roads are often adjacent to or cherry-stemmed within the roadless areas. Improvements to enhance recreation opportunities may include trailheads and interpretive, informational, and directional signs but improvements are minimal.

Scenery is managed to provide scenic integrity objectives where the landscape character is intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident.

Lands identified as available for Wilderness are managed so that activities will not jeopardize the eligibility of these areas for possible Congressional designation as Wilderness.

Condition Gap / Need for Change

Outside of Wilderness, the current Forest Plan allocated only 120,800 acres to be managed as semi-primitive non-motorized lands. Within these lands, the Forest Plan allows timber harvest and temporary road construction. The current plan direction does not reflect the stakeholder support and public comment favoring retention and preservation of undeveloped areas. Ecological sustainability factors also support preservation of areas for wildlife and native species habitat values.

Management Implications

Current Forest Plan direction allows road building in approximately 64 percent of the areas that have been inventoried as roadless in the 2005 Roadless Inventory.

Where there is management discretion, mineral leasing stipulations should be changed to No Surface Occupancy or Not Available within roadless areas with a semi-primitive ROS setting.

Risks to Achieving Desired Conditions

Prior existing rights for energy development may allow for road construction and development in existing roadless areas.

Performance Measures

Roadless areas would be measured by the acres of unroaded areas greater than 5,000 acres or areas contiguous to other unroaded lands.

1.2 Wilderness

Area of Analysis – Ecological Units

The National Hierarchical Framework of Ecological Units (NHFEU) are areas of increasingly uniform ecological areas that are classified and mapped based on associations of biotic and environmental factors that directly affect or indirectly regulate the structure and function of ecosystems. The need evaluation for Wilderness is based on the NHFEU at the Section level.

Condition and Trend

The GMUG National Forest manages a total of 556,641 acres of wilderness. Three wilderness areas are managed entirely and six wilderness areas share management with adjoining National Forests and BLM. Additionally, the GMUG manages two areas for their wilderness character, one of which is shared with the BLM. Visitors come to the GMUG wilderness areas for a sense of solitude, recreation, spiritual enhancement, and natural appreciation. In addition to these social values, wilderness areas have become important for the maintenance of species diversity, protection of threatened and endangered species, protection of watersheds, and scientific research.

Since the 1993 Forest Plan Amendment was prepared, 5,500 acres of wilderness have been added to the Raggeds Wilderness, 13,935 acres of National Forest lands were designated as the Powderhorn Wilderness, and 33,060 acres were designated as the Fossil Ridge Wilderness. Two areas were identified by Congress to be managed for their wilderness character – Roubideau (19,600 acres) and Tabeguache (9,065 NF acres) (see Figure 1.2.A.).

Evaluation of the roadless inventory has identified lands as available for wilderness. After completion of a needs assessment, available lands may be recommended for wilderness.

Desired Conditions

Ecological processes such as fire, insects, and disease essentially are allowed to operate relatively free from the influence of humans. Diversity resulting from natural succession and disturbance predominates and non-native vegetation is rare. Few if any human-made facilities are present. Few if any structural improvements exist. Travel is non-mechanized. Scenic integrity is very high; landform, vegetative patterns, water characteristics, and cultural features combine to provide unusual, distinctive, unique, and outstanding scenic quality.

Pristine areas are managed to protect and perpetuate their essentially pristine conditions. Plant species are indigenous to the immediate area, with exotic plants being extremely rare. Fire is reestablished as a natural ecological force. These areas provide the most outstanding opportunity for solitude and isolation. Encounters with small groups or individuals are infrequent. Travel is predominately cross-country. There is no lasting evidence of camping activity or human impacts on the natural environment. Indirect methods of accomplishing management objectives predominate.

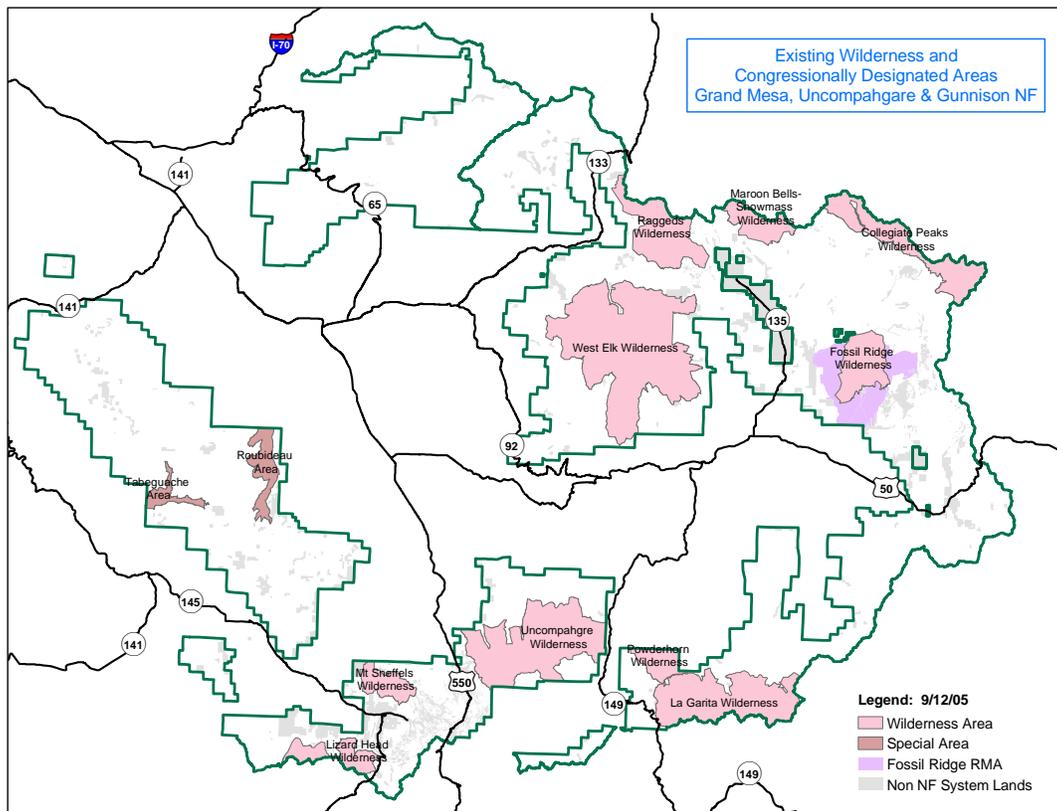


Figure 1.2.A. Existing Wilderness and Congressionally Designated Areas on the GMUG NF.

Primitive areas are essentially unmodified natural environments. These areas offer a moderate degree of solitude. Areas are managed to protect ecological conditions with effects of human activity minimized. Human influence on vegetation is minimal. Domestic livestock grazing is managed in accordance with Congressional Grazing Guidelines. There is evidence of established campsites. Campsites are dispersed; usually one will not hear or see visitors at adjacent campsites. Maintained trails exist; user-established trails are evident. Natural succession occurs on all existing vegetative communities and is influenced by processes and disturbance.

Semi-primitive areas are managed to protect natural conditions and provide access to primitive or pristine areas. Encounters with other users may be frequent due to concentrated use. Highly constructed and maintained trail corridors support access to popular destinations and travel routes. Overnight camping occurs; however, use is often heavily concentrated day-use. Management emphasizes sustaining and protecting natural conditions. Management actions to mitigate visitor use impacts of the resource may be noticeable. Human use and activities within the area are evident. Domestic livestock grazing is managed in accordance with Congressional Grazing Guidelines.

Condition Gap

The current Plan does not recognize the Congressional designations for Roubideau and Tabeguache Areas.

The current Forest Plan direction requires a fire management plan for natural ignition fire management. However, fire management plans do not exist for all wilderness areas on the Forest.

Capacity guidelines in the Forest Plan for Pristine, Primitive, and Semi-primitive wilderness are outdated and new guidelines should be developed.

Monitoring by Frissell Condition Class is too restrictive; develop guidelines that include new inventory methods such as Cole.

Management Implications

Suitability for Congressionally designated lands, both wilderness and other designations, is compliant with legislation.

New guidelines for Pristine, Primitive, and Semi-primitive wilderness recreational settings would need to be completed.

Preserve the wilderness character of those lands made available for wilderness under the roadless evaluation.

Risks to Achieving Desired Conditions

Plant species composition may be altered through livestock grazing.

Need for Change

Lands recommended for wilderness will be reallocated within the Forest Plan to Theme 1.

Performance Measures

- Number of completed fire management plans
- Campsite condition class by Wilderness ROS category (Pristine, Primitive, Semi-primitive)
- Number of livestock grazing related NEPA decisions focused on managing livestock in a manner compatible with wilderness values

1.3 Wild and Scenic Rivers

Area of Analysis

Area of comparison for Wild and Scenic Rivers varied by value being assessed. For example, scenery, wildlife, and fisheries were compared within the appropriate Ecological Units; recreation, history, and cultural values were compared at a State level.

Condition and Trend

Neither the 1983 Forest Plan nor either of the amendments (1991, 1993) underwent a systematic evaluation of outstandingly remarkable river values for Wild and Scenic River Eligibility. In 2005, all rivers on the Forest were evaluated for eligibility. Initial review identified 19 river/stream segments totaling 80 miles that were screened for free-flowing character and outstandingly remarkable values (ORV) (see Table 1.3.A.). The resource values evaluated in this process were fisheries, wildlife, geology, scenery, history and culture, and recreational potential. Rivers found to be free-flowing with at least one ORV were deemed eligible.

Table 1.3.A. Eligible Wild and Scenic Rivers located on the GMUG NF.

Name	Geographic Area	Length	Class
Oh Be Joyful Creek - 1A	Gunnison	4.8 miles	Wild
Oh Be Joyful Creek - 1B	Gunnison	1.2 miles	Recreational
Oh Be Joyful Creek - 1C	Gunnison	3.1 miles	Wild
Oh Be Joyful Creek - 1D	Gunnison	1.2 miles	Scenic
Slate River	Gunnison	3.5 miles	Wild
East River	Gunnison	6.7 miles	Recreational
Lower Taylor River	Gunnison	20.2 miles	Recreational
West Elk Creek	Gunnison	15.8 miles	Wild
Upper West Soap Creek	Gunnison	2.8 miles	Wild
Tabeguache Creek	Uncompahgre	3.7 miles	Wild
Escalante Creek	Uncompahgre	1.5 miles	Scenic
Bear Creek (Ouray)	San Juan	3.0 miles	Scenic
Cow Creek	San Juan	5.1 miles	Wild
Wetterhorn Creek	San Juan	1.0 miles	Wild
Wildhorse Creek	San Juan	1.4 miles	Wild
Difficulty Creek	San Juan	1.8 miles	Wild
Bear Creek (Telluride)	San Juan	2.8 miles	Recreational
Bridal Vail Falls	San Juan	NA	Recreational
Ingram Falls	San Juan	NA	Recreational

Each stream segment found eligible was then reviewed for potential classification as wild, scenic, or recreational based on the following criteria:

- Wild – rivers or sections of rivers that are free of impoundments with watersheds or shorelines essentially primitive; they generally are inaccessible except by trail with undisturbed landscapes.

- Scenic – rivers or sections of rivers that are free of impoundments with watersheds or shorelines still largely primitive and undeveloped; they can be accessible in places by inconspicuous, well screened local roads.
- Recreational – rivers or sections of river that are readily accessible by road or railroads and have some degree of development along their shoreline where minor structures are allowed, providing that the waterway generally remains natural in appearance.

Additional details regarding eligibility criteria and classification can be found in Chapter 6 of the Comprehensive Assessment.

Desired Conditions

River areas are managed to protect and perpetuate eligible river segments in their current condition so that their river qualities are not diminished. Existing uses, levels of use, and management actions will vary from area to area depending on its outstanding value. The actual width of an area may vary in order to protect the outstanding values. Interim protection for eligible streams includes the bed, bank, and one-quarter mile on either side of the ordinary high-water mark. Each stream's outstanding features, free-flowing characteristics, and potential classification are protected until a suitability study and final recommendation regarding river designation is made. Individual suitability studies will be considered when:

- Strong local interest or support is demonstrated for wild and scenic designation, and
- Congress expresses interest in a specific river for wild and scenic designation, or
- A proposed project would alter the free-flowing character of a stream (such as impoundment) or would affect the resources that made the stream eligible. Rivers are eligible under these categories:
 - Wild Rivers – The river corridor is natural and essentially primitive in character. Vegetation composition and structure are influenced by biological processes and conditions.
 - Scenic Rivers – Recreational opportunities vary across an area, depending on their compatibility with the outstandingly remarkable values. The setting provided by vegetation continues to appear natural. Facilities and permitted structures blend with the landscape and may be present. Scenic integrity is very high to high where the landscape character appears intact.
 - Recreational Rivers – Management emphasis is on protecting the values that make the watercourse eligible for designation as a recreation river. The health and appearance of vegetation communities are emphasized because of their desirability for recreation use. Silvicultural practices are allowed that protect the immediate river environment, recreation, fish and wildlife, and water quality values. Facilities and permitted structures blend with the landscape and may be present. Scenic integrity is very high to high where the landscape character appears intact.

Condition Gap

The current Plan did not identify any eligible river segments and, therefore, there is no wild and scenic river direction within the existing Forest Plan.

Management Implications

Existing uses, levels of use, and management actions will vary from area to area depending on its outstanding value.

Risks to Achieving Desired Conditions

Activities not under the control or authority of the U.S. Forest Service could occur on these eligible rivers or streams which could alter the ORV (e.g., new roads, water diversions/impoundments, facility developments, private land developments, etc.).

Need for Change

Provide protection for eligible river segments through Plan direction until river suitability studies are conducted.

Performance Measures

- Number of miles of river segments that meet criteria for Wild and Scenic River eligibility
- Integrity of ORVs within eligible river segments

1.4 Scenery

Scenic resources are components of the scenery and create a setting for the visual landscape. Scenic resources vary by location and existing natural features including vegetation, water features, landforms, geology, and man-made elements.

Scenery management is concerned with protecting the viewshed by maintaining the integrity of the scenic resources, through time, to meet the public desire for attractive natural landscapes and to support recreation, tourism, regional economy and physical well-being.

Area of Analysis

Generally the area of analysis for scenery and scenic resources is based on the GMUG National Forest, but for some inventory and assessments of scenery, broader landscape vistas beyond the GMUG boundaries may be included.

Condition and Trend

Benefits derived from scenic resources are varied and include identity, self-image of communities and individuals, and enhanced quality of life – including the conservation of the positive cultural landscape. The composition of these attributes is what gives a landscape its character or image.

The GMUG scenic resources contribute to these varied interests and are integral to the many recreation experiences occurring on the National Forests. Sightseeing, driving for pleasure, and outdoor photography are among the nation's leading recreational activities.

In 1997, 1,037 million sightseeing excursions were made to national forests (Cordell 1997). In 2004, G. Green, research scientist of University of Georgia, K. Cordell and C. Betz of the USDA Forest Service, and B. Stephens, associate professor of University of Tennessee, generated the following information:

Table 1.4.A. Sightseeing Participants.

Activity	Percent Participating	Participants in the millions
View/photograph natural scenery	70.6	151.2
Visit nature centers, etc.	63.5	135.9
Driving for pleasure	61.2	130.9
View/photograph other wildlife	58.2	124.6
View/photograph wildflowers, trees, etc.	57.0	122.0

This indicates that viewing scenery is one of the nation's most popular activities. Based on information from the National Visitor Use Monitoring (NVUM, FY 2004), the GMUG is ranked 12th in the nation of National Forests for total recreation visits. Providing a natural-appearing, scenic landscape is therefore an important element of forest management.

Scenic quality and scenic resources can benefit regional economies since tourism, which plays a major role in the economy of western Colorado, is closely intertwined with scenic values. The region's outstanding scenery is a key attraction to the GMUG and the

gateway communities surrounding the GMUG that act as portals into the surrounding public lands. Scenic NFS lands serve as important backdrops in rural towns and gateway communities. Scenic resources not only promote tourism, realty and recreation oriented businesses but it also underscores the importance of public and private lands as a setting that makes gateway communities attractive places to live and work.

The GMUG has five designated Scenic Byways. Recently, the Silver Thread Scenic Byway Board decided to extend its byway to connect with the West Elk Scenic Byway so that visitors will be provided the opportunity to experience a seamless scenic corridor from the San Juan Mountains to the West Elk Mountains. The extension will visually link a variety of southern and central Colorado communities, each unique and very different, and expose byway users to the ever-changing culture and landscape that defines the old and new West.

The GMUG is endowed with a wealth of landscapes, vegetation, and water features that range from river canyons to majestic mountain summits towering above 14,000 feet. It boasts one of the most photographed mountain scenes, the view of Mount Sneffels (Mount Sneffels Wilderness) from Dallas Divide (Hwy 62) in Colorado. The GMUG sustains the large continuous Aspen stands that bestow the forest with awe-inspiring beauty during autumn color show.

Of Colorado's 54 mountain peaks over 14,000 feet in elevation, seven of these peaks are on the GMUG. These peaks and the more than 70 peaks that are greater than 13,000 feet in elevation are important scenic attractions and define the scenic characteristics for much of the GMUG. There are ten Wilderness areas on the GMUG and other roadless areas with landscapes that provide sweeping panoramic vistas and the more pristine scenery and scenic resources.

According to research conducted by economist Thomas Michael Power, there is an economic value for scenic beauty and the preservation (non-use) value of Wilderness. Based on values derived for Colorado wilderness and unroaded wildlands by Power, the Wilderness areas of the GMUG may contribute about \$214 million in economic value to the region.

Because there is a correlation between scenic values and recreational use and enjoyment, the demand for high quality scenery is increasing. Indicators show increased recreational use on the GMUG and population growth in the area. Both of these influences translate into the need or desire to protect and preserve scenic quality

Desired Conditions

Apply scenery management principles to all National Forest System activities.

Landscapes maintain an overall natural-appearance.

The viewsheds along scenic byways promote scenic values.

Opportunities to view high-quality scenery that represents the natural character of the region are plentiful.

The supply or inventory of high to very high scenic resources would meet or exceed the demand.

Forest management activities should strive to be visually subordinate to the surrounding scenery.

Condition Gap

Currently, all baseline scenery information was derived from the Visual Management System (VMS). The Scenery Management System (SMS) needs to be used to determine the relative value and importance of scenery on National Forest Lands. This new system is used in the context of ecosystem management to inventory and analyze scenery, assist in developing natural resource goals and objectives, monitor scenic resources, and ensure that attractive landscapes are sustained for the future.

The SMS inventory is not completed on the GMUG. Therefore, the areas of the GMUG that can be classified as very high or high scenic value are not known.

The system to monitor scenic resources is not in place and those links to scenic resource demand are not known.

Management Implications

The Forest Service needs to complete the SMS inventory for the GMUG.

Objectives for maintaining scenic integrity based on acres per scenic classification category need to be defined in the Forest Plan.

Review of existing projects and activities is needed to determine whether they meet scenic integrity objectives once they have been determined.

Applying scenery management principles into project design and reviewing land-use activities on NFS lands to incorporate scenery management objectives into the authorizations or conditions of approval.

Risks and Uncertainties

If the SMS inventory is not completed in time to be addressed in the Forest Plan revision because of funding or staffing constraints, then the GMUG may not be able to meet desired conditions related to scenic resource management.

As the potential for large-scale catastrophic disturbances such as wildfire or insect and disease pandemics increase there is a greater risk to maintaining or protecting high or very high scenic quality landscapes.

High elevation spruce-fir and large continuous stands of aspen valued for their scenic resources are becoming more susceptible to stand altering disturbances.

As the population increases in the region, the GMUG may find it more difficult to meet scenic resource management objectives as there will be more scenery oriented recreational use on NFS lands.

Need for Change

The GMUG needs to complete and implement the SMS for NFS lands.

Actively incorporate SMS inventory and the related scenery management objectives into overall forest management rather than utilize scenery classifications as tracking mechanisms.

Utilize NVUM data and other demographic indicators to better incorporate demand into the SMS process.

Performance Measures

- Scenic integrity levels
- Acres of the various scenic integrity categories by theme
- Scenic integrity levels in utility corridors (Theme 8)
- Scenic classes
- Scenic attractiveness
- Landscape visibility

1.5 Heritage Resources

Area of Analysis

The area of analysis was the GMUG National Forest.

Condition and Trend

The heritage resources of the GMUG are generally in stable but declining condition. All archaeological sites are on a trend toward loss of value due to decay, natural site weathering, and destruction processes. The severity of the loss depends on the inherent qualities or values of each site. Many of the GMUG sites are valued primarily for their scientific data potential and often consist of buried deposits of artifacts. These are subject to erosion, gravity, and other agents which may include decay of chemical traces and organic materials, corrosion of materials, burial by deposited sediments, churning and mixing of soil and artifacts caused by wild animals, and freeze-thaw fracture cycles. Human-caused impacts, such as road construction and use, visitor behavior (picking up items, digging, and compaction from use), livestock, and land-management activities such as logging or fuels reduction, can also impact these sites. Illegal site excavation and theft of artifacts occur on the GMUG each year, but are poorly documented. Some site types known to contain artifacts of high market value are no longer be found intact within the Forest.

Sites that are standing above ground, in addition to the scientific values, also have commemorative, historical, and/or artistic and aesthetic value to many people, or may be important because they are associated with important historical events. Many of these sites contain above-ground structures and features such as buildings, monuments, petroglyphs or pictographs, canals, railroads, bridges, and other features. At these locations, the aesthetic and physical settings of the area are also significant values, in addition to the physical remains themselves.

Impacts to sites that have commemorative, historical, and/or artistic and aesthetic value include direct impacts to the remains from the processes of natural decay and human-caused impacts and less direct impacts to the setting, associations, and “feeling” from changes in the surround area. On the GMUG, most of these highly significant sites contain wooden structures such as cabins, ranch and mining structures, wickiups, carved pines and aspens, railroad and ore tram structures and others, and these are subject to accelerating rates of decomposition due to aging over time. These structures are also susceptible to forest fires, which have increased in number and size in recent years. Visitors may find these sites especially attractive to visit, which can damage them via soil compaction, graffiti, wear, and illegal removal or collection of items or features. Theft of historical materials such as weathered wood (i.e., barn wood), bottles, and old mining machinery is common in some areas. Changes to settings have occurred due in part to the Forest’s multiple-use emphasis, which includes vegetation management, construction or improvement of roads or trails, power lines, highways, and recreational facilities, which may result in changes or loss of aesthetic experience, introduction of intrusive elements, crowding, or other changes.

The GMUG contains approximately a dozen remote administrative sites, which were ranger stations or guard stations used to manage the Forest. Many of these are receiving

decreased or no use for administrative activities and are proposed for abandonment or removal. Several of these are among the oldest in the state and all are important historically. Years of disuse have resulted in poor condition and high maintenance needs for many of the stations. Without action, many of these structures may succumb to vandalism, decay, and ultimately loss.

Forest Service heritage and cultural resource records, photographs, and artifacts stored on the GMUG are also heritage resources. As these records exceed 100 years of age, deterioration of paper, chemicals, and images is occurring. Collections from past archaeological projects are stored in ad hoc locations and packaging materials and are scantily inventoried. They may be scattered, stolen, or mixed together if not stored and labeled carefully.

Desired Conditions

Protect significant heritage resource sites and associated values from damage or destruction.

Provide a range of heritage sites and experiences for public visitation and education.

Provide timely review of Forest Service projects and activities to identify and evaluate heritage resources and incorporate site management requirements into project planning at the earliest stages.

Inventory, secure, and conserve artifact, photographic, and archival collections maintained by the Forest Service. Make these collections available for local communities and researchers.

Utilize partnerships and public participation opportunities to develop and maintain heritage resource interpretive programs and products.

Make heritage interpretive efforts compatible with the physical and cultural settings associated with the heritage resource values.

Consult regularly and productively with Native American tribes regarding issues of importance to tribes and cultural patrimony and traditional culture.

Management Implications

Plan for timely inventory and evaluations of sites during analysis for all projects that may have a potential to impact heritage sites.

Consistency and compliance with all State standards for recording, evaluating significance and designing management and protection or stabilization plans for sites is needed.

Curation requires a secure, climate-controlled storage facility with appropriate staffing for both records and artifacts that is located where local communities may access them.

Track key heritage resource assets and maintain inventories of heritage values to avoid losses or degradation of values.

Conduct regular inspections of sites and take action to maintain them in a timely manner.

Develop a procedure to collect detailed monitoring data on natural- and human-caused archaeological site degradation on the GMUG.

Further solidify partnerships for heritage resource protection, interpretation, and education.

Sites developed for visitor use must be prepared through analysis, collection, stabilization, vandalism protection, and other mitigation prior to inviting increased use by the public.

Sites developed for visitation and other land uses need to be compatible with each other and with the ROS and other planning affecting the visitors experience and expectations.

Providing public archaeology opportunities such as Passport in Time projects requires staffing, modest funding, follow-up with documentation, analysis, and reporting as appropriate.

Find adaptive new uses and partnerships for administrative sites slated for abandonment in order to reduce damage from deferring needed maintenance.

Condition Gap

Heritage resource management has been predominately focused on project and activity review and evaluations (reactive).

The 1983 Forest Plan lacks specific direction to manage heritage resources for public enjoyment and education.

The current situation does not provide for consistent and guaranteed protection of Forest Service artifact and archive collections.

Government to government relationships and consultation procedures afforded to Native American tribes was not addressed in the 1983 Forest Plan and are now required when managing heritage resources or evaluating project/activity effects.

Risks to Achieving Desired Conditions

Increased recreational use of OHVs has allowed more visitation to many of the historical structures and sites in the high elevations areas of the GMUG. Such increased use appears to have greatly accelerated deterioration and provided greater opportunities to collect artifacts from these sites.

Lack of law enforcement capability to police and protect the remote heritage resource sites will continue to make protection and preservation objectives difficult.

Lack of funding to provide adequate or necessary maintenance of heritage resource sites on GMUG.

Need for Change

Provide guidance and direction for heritage resource management to promote public enjoyment and education.

Develop procedures for inventory, tracking, and protection of Forest Service artifact and archive collections

Formalize partnerships with other public agencies, interest groups, and users to help educate the public and provide for greater heritage resource protection.

Performance Measures

- Numbers of sites recorded and projects inventoried
- Numbers of site monitored
- Deferred maintenance on key Forest heritage sites
- Track status and location of Forest Service artifacts and archive collections.

1.6 Special Interest Areas

Area of Analysis

The area of analysis was the GMUG National Forest.

Condition and Trend

The Forest currently has five special interest areas identified – two geologic, one cultural, one botanical, and one paleontologic (see Table 1.6.A.). Updated botanical, hydrologic, and geologic data has surfaced additional lands with unique and/or unusual characteristics. Among those findings are a series of botanical areas with unique representation of floral species. Additionally, an area of unusual aquatic features and a landform of geologic significance have also been identified (see Table 1.6.B.).

Table 1.6.A. Existing Special Interest Areas located on the GMUG NF.

Name	Acres (rounded)	Average Elevation	Proposed Mgmt	Category
Slumgullian Slide	288	11,400	Theme 2 SIA	Geologic
Dry Mesa Quarry	55	7,500	Theme 2 SIA	Paleontologic
Ophir Needles	445	11,500	Theme 2 SIA	Geologic
Alpine Tunnel	200	11,000	Theme 2 SIA	Cultural
Mt. Emmons Iron Bog	170	10,000	Theme 2 RNA	Botanical

Table 1.6.B. Proposed Special Interest Areas located on the GMUG NF.

Name	Acres	Elevation	Proposed Management	Category
Taylor-Willard	511	12,000	Theme 2 SIA	Botanical – shared with White River; note: retain road travel through pass
Wager Gulch Iron Fen	474	11,500	Theme 2 SIA	Botanical
Willow Mesa	4,895	12,700	Theme 2 SIA	Botanical – in LaGarita Wilderness
Ironton Park Fen	320	9,700	Theme 2 SIA	Botanical and Cultural
Spring Creek Spring	3		Theme 2 SIA	Hydrologic

Desired Conditions

These areas are managed to maintain, protect, or enhance (and, where appropriate, develop and interpret for public education or recreation) their unusual characteristics. Typically, SIAs have been designated as botanical, geological, historical, paleontological, or scenic. SIAs can vary in size from small to fairly large.

The setting usually is natural but will vary depending on the area. Evidence of human activities or habitation is consistent with the characteristics for which the area is established. These areas are managed to maintain their special interest values. Vegetation, terrestrial and aquatic habitat, soil productivity, and water quality will usually appear to be nearly natural (relatively pristine or pre-settlement) in these areas. Scenic integrity is high to very high.

Condition Gap

Plan direction for the existing non-botanical SIAs is adequate; however, specific direction for special botanical areas is lacking.

Risks to Achieving Desired Conditions

Some SIAs are currently in active management prescriptions and could become altered by those management activities.

Need for Change

Social values have changed since the last Forest Plan decision. There is an increase in biological, scenic, and recreational values that was not accounted for during the last planning effort.

Inventories and identification of unique botanical species were not available during the development of the last Forest Plan.

Some potential SIAs are currently in active management prescriptions within the existing Forest Plan.

Management plans for each new SIA should be developed.

Performance Measures

- Integrity of SIA by type (botanical, hydrologic, cultural, geological)

1.7 Research Natural Areas

Area of Analysis – Ecological Units

Potential Research Natural Areas are evaluated within the appropriate ecological unit; in this case, the eco-region used was the Section. There are four ecological sections represented within the GMUG National Forest: South Central Highlands, Northern Central Highlands & Rocky Mountain, Northern Park and Ranges Sections within the Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow Province, and the Northern Canyon Lands Section of the Intermountain Semi-Desert and Desert Province.

Condition and Trend

Research natural areas (RNAs) are selected to preserve a spectrum of relatively pristine areas that represent a wide range of natural variability within important natural ecosystems, environments, and areas that have special or unique characteristics of scientific importance. The GMUG National Forest currently has two Research Natural Areas – a high elevation spruce ecotype and a riparian Blue Spruce ecosystem. A representation of common plant communities within ecological units (Bailey) is desirable. Some plant communities, particularly at the lower elevations, are currently underrepresented. Recent inventories have identified a more diverse representation of plants and plant communities on the GMUG than are currently represented in existing RNAs. A summary of the existing RNAs on the GMUG are listed in the Table 1.7.A. and displayed in Figure 1.7.A.

Table 1.7.A. Existing Research Natural Areas located on the GMUG NF.

Name	Acres (rounded)	Average Elevation	Eco-Section	Major Plant Association
Escalante Creek	60	8600	M341B	Blue spruce riparian
Gothic	1080	11,020	M331I	Sub alpine fir - Spruce

Desired Conditions

RNAs are managed to maintain natural, relatively pristine, or pre-settlement conditions by allowing ecological processes to prevail with minimal human intervention. Non-motorized and non-mechanized recreation and scientific and educational uses are allowed on designated forest system trails that existed prior to RNA establishment. Construction of new trails is prohibited unless necessary to correct resource damage occurring on existing system trails. New or expanded recreation uses are not encouraged. Scenic integrity is high; the landscape character is intact with only minute, if any, deviations. Livestock grazing is allowed only where needed to establish or maintain vegetative community objectives. Areas identified for potential recommendations as Research Natural Areas are listed in Table 1.7.B.

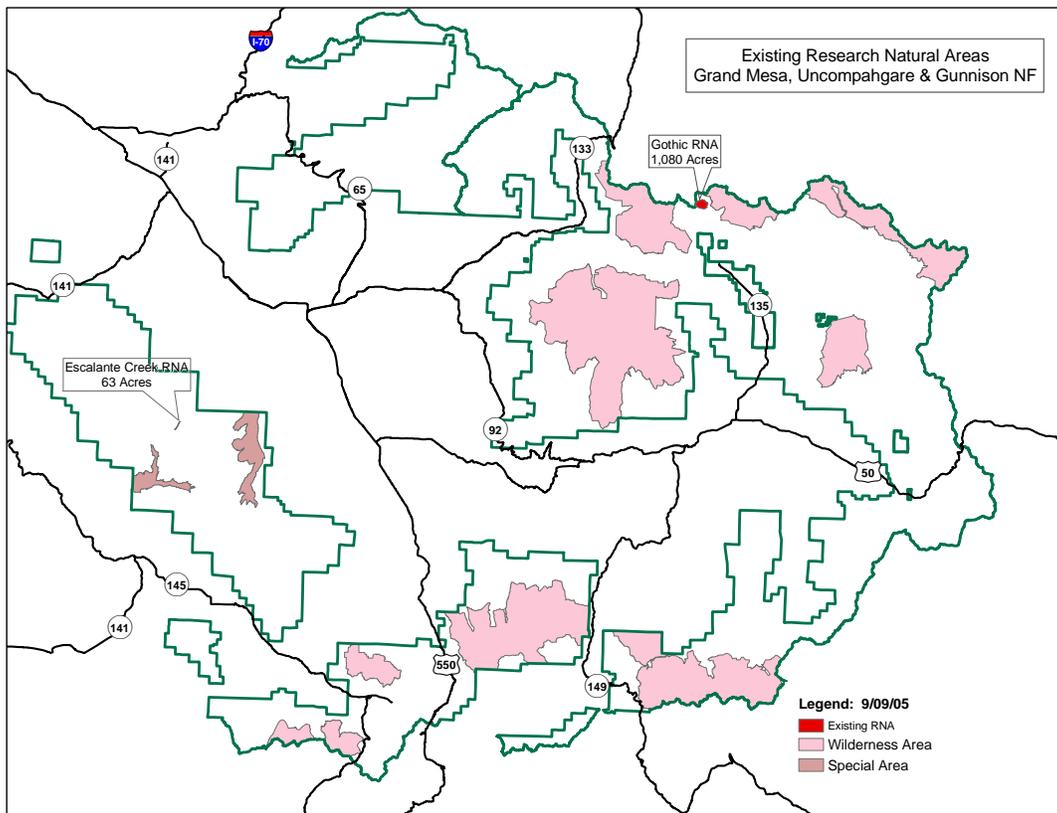


Figure 1.7.A. Existing Research Natural Areas located on the GMUG NF.

Table 1.7.B. Potential Research Natural Areas located on the GMUG NF.

Name	Acres (rounded)	Average Elevation	Eco-Section	Major Plant Association	Proposed Mgmt
Mt Emmons Iron Fen	170	10,000	M331I	Wetland Iron Fen	Theme 2 RNA
Big Atkinson Breaks	3,320	7,700	M341B	Pinyon Woodland	Theme 2 RNA
Lower Battlement Mesa	10,240	7,200	M331H	Pinyon Woodland	Theme 2 RNA

Condition Gap/ Management Implications

Reevaluating lands for special designations during forest planning is a procedural requirement. Existing direction and guidance in the Forest Plan is adequate for RNAs. However, additional lands are being recommended as RNAs and a reallocation of management direction is needed.

Need for Change

The need for Research Natural Areas is evaluated on a provincial ecological scale. If a deficiency is realized that the GMUG can satisfy, then a reallocation of land and special

management direction will be developed. Those lands will be recommended as RNAs. Establishment reports for each area recommended will be developed for approval by the Regional Forester. Management plans for each RNA is required by Forest Service Manual direction.

Performance Measures

- Number of approved establishment reports
- Number of completed management plans
- Intrusion of uses that could affect the quality of potential RNAs

1.8 Recreation (Developed)

Area of Analysis

Area of evaluation is the GMUG National Forest.

Condition and Trend

Recreation management consists of providing recreation opportunities to meet the needs of users and local communities in balance with protection of forest resources. On the GMUG, demand for recreation continues to grow. This rise is linked to an increasing local and regional population, as well as to higher numbers of visitors from throughout the country and the world.

At developed recreation sites, facilities have been constructed to provide recreation experiences, protect resources, or otherwise manage activities. These infrastructure developments range from complete campgrounds to a simple bulletin board or parking barriers at a parking lot.

Although many existing campgrounds are being upgraded, outdated facilities are still prevalent. Many parking spurs are too short for modern recreational vehicles and trailers and doorways to toilets are too narrow for wheelchairs. Needs for additional facilities are overshadowed by a shortfall in maintenance and rehabilitation funds for existing facilities and the high cost of construction around the Forest. As funds have become available, the trend has been to devote resources to upgrading the larger campgrounds and developed recreation sites which receive high levels of use.

Concessionaire operated campgrounds is a tool the Forest is utilizing to off-set maintenance costs. It is the responsibility of the permittee to perform daily cleaning and maintenance; however, the long-term quality and condition of these facilities still is the responsibility of the Forest Service.

Another trend already underway is the increase in partnerships in response to agency budgets failing to keep up with inflation. More of these arrangements are likely to be seen in the future and a higher percentage of the recreation budget will be allocated to managing partnerships.

It is anticipated that demand for developed facilities will continue to increase and that the Forest will be unable to meet that demand.

Desired Conditions

Anticipated demand for developed amenities will most likely not be met. However, when opportunities for new development arise, priority will be given to accommodating uses within the High Use recreation emphasis areas. Facilities will be economically self-sustaining and meet the desired ROS and recreation emphasis area objectives.

Low-use developed sites may exist where the need to protect the environment is paramount to economic sustainability.

Areas such as campgrounds, day-use areas, visitor centers, trailheads, scenic overlooks, interpretive sites, groups of recreation residences, winter sports sites, Nordic centers and resorts may be present. As such, major site modifications and facility installations are

expected. These areas may include both private and public facilities located on National Forest System lands. Roads, trails, and sometimes highways are often clearly evident. Roads and recreation sites may be paved. Trails are generally highly maintained and may be surfaced.

Recreation opportunities occur in an intensively managed, highly regulated environment modified to accommodate a high level of interaction among users. There are few, if any, opportunities for solitude. On-site regulation and control are obvious but harmonize to the extent possible with the natural setting.

Recreation facilities are developed and maintained to provide a variety of high quality recreational experiences in a primarily natural setting. The level of development is commensurate with demand and visitor expectations. Vegetation communities are maintained or improved to provide an eye-pleasing appearance for visitors, complement the recreation values, and provide varied structural stages and plant communities. The areas will provide parking and access to sites, natural attractions, water features, or areas that provide desired recreation opportunities such as camping, hiking bicycling, skiing, snowmobiling, fishing, and scenic driving.

The recreation opportunity spectrum (ROS) for this management area is roaded natural or rural in the summer. Winter ROS is semi-primitive non-motorized, semi-primitive motorized, roaded natural, or rural. Scenery is managed to provide a range of scenic integrity objectives from High, appears intact, to Moderate, where the landscape appears slightly altered and noticeable deviations remain visually subordinate to the landscape character being viewed.

Condition Gap/Management Implications

Current Forest Plan direction requires the Forest to meet 50 percent of increased demand above existing capacity for developed recreation opportunities. The Forest has not been able, nor expects, to attain this goal.

The Forest Plan guidelines for developed facilities are outdated. Current design guidelines for accessibility and use patterns need to be incorporated into Forest Plan direction

Need for Change

Demands for recreation opportunities have outpaced facilities and budget allocations.

Performance Measures

- Quality of developed facility and services

1.9 Recreation (Dispersed)

Area of Analysis

Area of evaluation is the GMUG National Forest.

Condition and Trend

Dispersed recreation use typically occurs where there are no developed facilities present. Generally, there are no developed facilities in these areas; however, minimal facilities may be present for the protection of the environment. Most dispersed use on the GMUG occurs during the summer months. NVUM data indicates that the GMUG has a high proportion of dispersed recreation activities. Hunting, fishing, camping, and trail use are the primary summer-fall dispersed recreation activities on the GMUG. Winter activities include backcountry skiing, snowboarding, snowshoeing, sledding, and snow machine activities.

Being a source of diverse and exceptional outdoor recreation opportunities, the GMUG has experienced a trend in increasing recreation use and activities. The diversity of activities continues to grow, contributing greatly to increased conflicts among users. Recreational travel for both summer and winter is an integral part of dispersed recreation activities. Summer off-road-vehicle activities in particular have increased for motorized and mechanized activities which is discussed in greater detail under section 1.11 Summer Travel. Winter uses are also expanding at a rapid rate and discussed in greater detail in section 1.12 Winter Travel. Because the number and size of access points are greatly reduced in winter months, the potential for conflict increases.

Allocation of public, private, and commercial use within available capacities has become more of an issue in dispersed areas as the number and variety of uses increase. Capacity is particularly important to commercial outfitters, who, in most cases, are limited to a small percent of the total available capacity.

Factors that influence the changes in dispersed recreation on the Forest include:

- A rapidly growing local population at a rate well above national populations growth
- The development of new generation machines, such as all-terrain vehicles and mountain bikes, as well as better outdoor equipment and clothing, has increased access to backcountry for dispersed recreation
- Upgrading the Forest roads that provide access to backcountry areas to a higher road maintenance standard increases the numbers of users that visit an area, thus increasing trail use, camping, and other dispersed recreation activities
- The evolution of alpine ski resorts into four-season resorts that attract visitors for a range of activities through the year
- Dramatic growth and diversification of dispersed winter recreation

Desired Conditions

A wide variety of backcountry recreation opportunities exist while maintaining a natural-appearing landscape. The areas may be designated as either motorized or non-motorized. The non-motorized areas will usually have vehicular access to a central parking area from which use originates.

High Use Dispersed recreation niche areas are managed to mitigate resource impacts rather than regulating visitor densities or providing amenities. Demand for dispersed camping will be met by concentrating use within the High Use Dispersed recreation niche areas and along Roaded Natural road corridors within the General Forest recreation niche areas. Level 3 and 4 roads within a Roaded Natural setting will provide the preponderance of dispersed camping opportunities within a High Use Dispersed recreation niche area. High Use areas will tend to have concentrated areas of camping rather than scattered, isolated sites. Facilities may be present to provide for sanitation or to protect resources. Biological communities are maintained or improved to provide an attractive setting for visitors, complement the recreation values, and provide varied plant communities, structural stages, and associated wildlife.

Low Use Dispersed recreation niche areas are managed to maintain low density of camping sites. Level 2 roads within a Roaded Natural setting will provide the greatest proportion of camp sites within the Low Use Dispersed recreation niche area and, as such, should be managed to retain their Level 2 development level.

The recreation opportunity spectrum (ROS) for this management area is semi-primitive non-motorized, semi-primitive motorized, or roaded natural. Scenery is managed to provide a range of scenic integrity objectives from High, appears unaltered, to Moderate, appears slightly altered.

Management Implications

The existing Forest Plan has very little direction associated with dispersed recreation. Existing direction is generally prefaced in terms of ROS settings. There is a logical correlation between ROS settings and dispersed recreation guidance. However, current Plan direction is weak at best and does not go far enough to acknowledge objectives for dispersed recreation activities.

Capacity guidelines within the existing Forest Plan do not account for activities that have emerged since the last Plan.

Condition Gap

Dispersed camping densities identified within the existing Forest Plan do not adequately address management needs and concerns to achieve desired conditions.

Capacity coefficients do not address emerging activities.

The existing Plan does not utilize new data such as that represented in Recreation Niche Areas (as described within the Colorado Recreation Strategy).

Risks to Achieving Desired Conditions

Increasing populations.

Need for Change

Forest Plan direction should acknowledge the correlation between ROS settings and dispersed recreation activities. Within those ROS settings, thresholds may need to be established to retain desired conditions. Recreation management objectives need to be incorporated into management direction.

Performance Measures

- Numbers of visitors participating in dispersed recreation activities
- Number/density of dispersed campsites by condition class within each ROS setting

1.10 Recreation Opportunity Spectrum (ROS)

Area of Analysis

Area of evaluation is the GMUG National Forest.

Condition and Trend

By managing the natural resource setting and the activities that occur within it, forest managers provide for a range of recreation opportunities. The recreation opportunity spectrum (ROS) is a classification system that describes recreation settings. ROS classes cover all acres of land on the National Forest and are used by managers to provide guidance for the desired conditions of all areas in relationship to the recreational experience regardless of management theme.

Because the ROS setting has a component that is based on physical attributes of the landscape, the setting can and has shifted as a result of additional roads, trails, timber harvest, and other resource management activities. As these shifts have occurred, non-wilderness backcountry areas represented in the semi-primitive portion of the ROS spectrum have been reduced in size. Additionally, conversions of backcountry lands to Wilderness have also affected the semi-primitive lands. Figure 1.10.A. illustrates this phenomenon. The current ROS settings on the Forest are described as an inventory of the existing condition and are highlighted in Table 1.10.A.

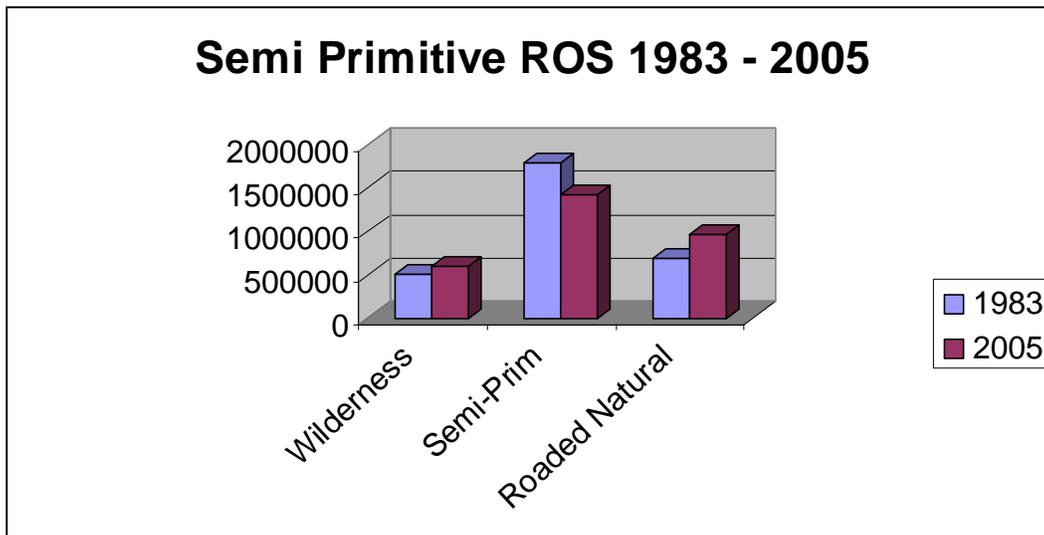


Figure 1.10.A. ROS comparison for the GMUG NF.

Table 1.10.A. Existing ROS Inventory for the GMUG NF.

ROS Inventory - 2005	Percent
Wilderness	20%
Semi-primitive Non-motorized	19%
Semi-primitive Motorized	29%
Roded Natural & Roded Modified	28%
Roded Natural Non-motorized	1%
Rural	3%

Desired Conditions

The assigned desired ROS condition class is the maximum level of use, impact, development, and management that an area should experience over the life of the Forest Plan. The ROS classes are as follows:

- **SPNM (outside of Wilderness)** – The area is non-motorized backcountry characterized by a predominantly natural-appearing environment of greater than 2,500 acres where motorized travel is not allowed. Resource modification and utilization practices are not evident. Recreation opportunities are primarily those which provide opportunities for self-reliance and challenge. Opportunities are provided that allow the visitor to have a high degree of interaction with the natural environment. Concentrations of users are low. Primary summer activities would include hiking, mountain biking, hunting, fishing, backpacking, and camping. Scenic integrity objectives are Very High, is intact with only minute if any deviations, to High, appears intact where deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident.
- **SPM** – The area is motorized backcountry characterized by predominantly natural appearing environment of greater than 2,500 acres. Resource modification and utilization practices are not evident. The area provides for a motorized backcountry experience utilizing motorized trails and high-clearance, four-wheel drive roads, generally designed as a Level 2 road with native surfacing. Concentrations of users are low. Opportunities are provided that allow the visitor to have a high degree of interaction with the natural environment. Primary summer activities would include motorized trail riding, four-wheel driving, hunting, fishing, and dispersed camping. Scenic integrity objectives are Very High, is intact with only minute if any deviations, to Moderate along road corridors where the landscape appears slightly altered.
- **RN** – The area is a general forest area characterized by predominantly natural appearing environments with moderate evidence of sights and sounds of man. Resource modification and utilization practices are evident but harmonize with the natural environment. The areas often take on a mosaic of development and resource evidence from highly modified areas to pockets of unmodified lands. Conventional motorized use is provided for in construction standards such as road widths and surface hardening. Roads will accommodate passenger vehicles. Developed campgrounds, picnic areas, developed interpretive sites, and visitor centers may be present within this setting. Motorized travel on roads and trails are also within this setting. Hunting, fishing, and viewing scenery are common activities. Scenic integrity objectives are Very High, is intact with only minute if any deviations, to Low, where deviations begin to dominate the landscape.
- **RN-NM** – Similar to the RN setting, this area is characterized by natural appearing environments that have evidence of resource modification and utilization practices. These lands allow roads for the sole purpose of providing access for active resource management needs. The area provides a

non-motorized recreation experience in a modified environment. The primary recreation activity within these areas is hunting. Scenic integrity objectives are High, appears intact where deviations may be present but must repeat the form, line, color, texture, and pattern common; to Low, where deviations begin to dominate the landscape.

- RM – Roaded Modified lands are those that have been permanently altered by existing linear rights-of-way corridors, such as major oil and gas pipelines, major water transmission systems, and electrical transmission corridors. These areas are characterized by significant modifications to general forested areas. Vegetation composition and structure have been altered to meet the needs of the site. Physical disturbances to existing conditions frequently are high within the right-of-way corridor and low outside the corridor. Dispersed recreation activities may be available for both motorized and non-motorized activities, including hunting, OHV riding, snowmobiling, hiking, cross-country skiing, horseback riding, and bicycling. Scenic integrity objectives are Moderate, where the landscape appears slightly altered, to Very Low, where deviations begin to dominate the landscape.
- R – This area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities. Facilities are often designed for use by a large number of people. Development of facilities is for user comfort, such as pavement on roads and trails and convenience amenities within campgrounds. Common facilities within this setting would be Visitor Centers, highly developed campgrounds such as those that provide electricity and water hook-ups, and areas with multiple facility developments such as lodges, campgrounds, and summer homes. Scenic integrity objectives are High, appears intact where deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident; to Moderate, appears slightly altered and where noticeable deviations remain visually subordinate.

Management Implications/Condition Gap

Current inventory of the SPNM ROS identified 19 percent of non-wilderness lands. Existing 3A prescriptions (SPNM) represent five percent of non-wilderness lands across the Forest. Current Plan directions for these areas allow roading and road use to accomplish non-recreation management activities. Suitability direction for road construction within SPNM areas is needed.

Current inventory of the SPM ROS identified 29 percent of non-wilderness lands. Existing 2A prescriptions (SPM) represent only 14 percent of non-wilderness lands across the Forest. Many of the 2A areas in the Forest Plan are less than the 2,500 acres minimum size for SPM ROS settings. Current Plan directions for these areas allow road building for non-recreation purposes and timber harvest. There is currently no direction for road/trail densities affecting thresholds for SPM (2A) areas.

For the remaining non-recreation prescriptions, the existing Forest Plan sets ROS as an outcome of resource activities rather than a desired condition. To obtain desired conditions for ROS, plan direction must recognize ROS as a desired condition.

Need for Change

ROS settings should be a desired condition rather than an outcome.

Thresholds for roads/trails are required to maintain the SPM setting and desired condition of high opportunities for interaction with nature.

Thresholds for dispersed camping densities are required to maintain the SPM desired condition for low concentration of users.

Performance Measures

- Acres of semi-primitive non-motorized (SPNM) ROS settings outside of wilderness
- Acres of semi-primitive motorized (SPM) ROS settings
- Quality of SPNM settings measured by miles of road/motorized trail intrusions
- Road/motorized trail densities within the SPM settings
- Road maintenance levels within the SPM settings
- Dispersed campsite density within SPM settings

1.11 Travel (Summer)

Area of Analysis

Area of evaluation is the GMUG National Forest.

Condition and Trend

Travel is an integral part of virtually every activity that occurs on the Forest. Travel is necessary for outdoor recreation, fighting wildfires, management of livestock and wildlife, management of commodity resources, access to private inholdings, maintenance of electronic sites and utilities, and management and monitoring of the Forest in general. The past 10-15 years have brought a shift in the volume and mix of travel modes on the Forest. While traditional commercial use continues to be a transportation need, recreation use and modes of travel are ever increasing.

All forms of recreation travel have increased in volume, some more dramatically than others. Variation in these increasing volumes can be attributed to a number of reasons. Factors include technology advances, economic conditions, changing demands for recreational experiences, population increases, and other social influences. Irrespective of the dramatic increase in traffic on Forest roads, road maintenance budgets have been relatively stable during the past 15 years. Consequently, not all roads have been maintained to the level prescribed in management objectives.

Most of the Forest's roads and trails for the current level of use are in place. Commercial use of the transportation system declined in the 1990s and this trend is expected to continue in the coming decade. On the other hand, recreational traffic has more than doubled. Recreation travel systems were not previously planned for. Historically, travel routes were established for commodity extraction purposes. Recreational travel routes, particularly trails, were very limited. As a result, users have been creating routes to accommodate their recreation needs and user-created trails have expanded across the Forest for both single track (motorcycle and mountain bike) and double track (ATV) activities. This shift in traffic composition and user types is a driving force for development of new travel management philosophies and strategies.

Trails can be an effective means of managing public travel and access in the backcountry. An increasing demand for a more primitive type of experience by all user groups has placed greater emphasis on trail system planning. As this demand goes up and non-wilderness backcountry areas shrink, there is an ever increasing competition between users for use of travel routes. With the multitude of diverse uses – from hiking to mountain bikes to off-highway vehicles – has come an increasing demand for segregating the uses. Increasingly, OHVs are being used during the fall hunting seasons for hunter access. Mountain biking has dramatically increased in the last decade and will continue to do so. And hikers and equestrians are seeking the solitude of years past.

Public input indicates non-motorized travelers are finding it more difficult to find areas outside of wilderness free of motorized use. Motorized users maintain that the Forest provides more than ample opportunity for seclusion within 556,641 acres of wilderness. There is concern that future management will tend to reduce motorized access. Demand has led to the need to identify areas of motorized and non-motorized travel.

The diversity in types of experiences recreation users expect tends to add complexity to travel management. Trends indicating increasing demand for semi-primitive uses, motorized and non-motorized, lead to the need for a more extensive trail system. Motorized users have the ability to travel much farther distances in a given span of time; they desire to have more looping or through routes. Non-motorized users often prefer day hike or bicycle ride opportunities within a convenient drive from town. Managing the multitude of user demands and providing quality recreation experiences will require intensive efforts in planning, public education, signing, and facility maintenance. Recreation opportunity spectrum (ROS) settings affect travel management strategies in that they specify motorized and non-motorized opportunities. Figure 1.11.A. illustrates backcountry areas and the existing transportation system. Table 1.11.A. and Table 1.11.B. explain the travel opportunities within the semi-primitive backcountry areas.

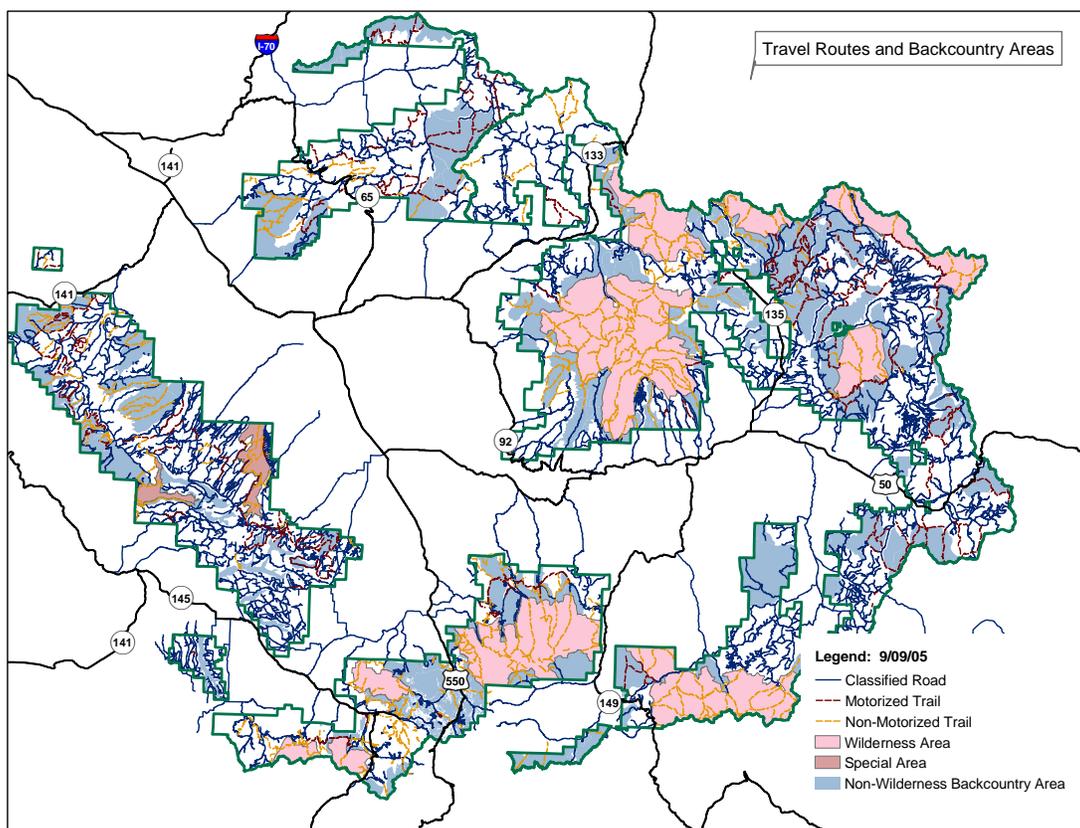


Figure 1.11.A. Backcountry areas and the existing transportation system on the GMUG NF.

Table 1.11.A. Motorized Recreation Opportunities – Roads and Trails by Forest Type (in miles).

Geographic Area	Backcountry Motorized		Total miles Backcountry	General Forest Areas		Total miles GFA
	Motorized Trails	Level 2 Road*		Motorized Trails	Level 2 Road	
Grand Mesa – 298,345 acres	40	25	65	82	113	195
Gunnison – 1,280,530 acres	236	186	422	118	959	1,077
North Fork Valley – 490,790 acres	9	5	14	22	146	168
San Juans – 298,345 acres	21	48	69	18	59	77
Uncompahgre Plateau – 577,586 acres	47	62	109	131	512	643
Totals – 2,977,590 acres	353	326	679	371	1,789	2,160

*High Clearance or Four-wheel drive Roads

Note: Roads designed for passenger cars are not a part of this calculation as they do not contribute to quality OHV opportunities.

Table 1.11.B. Non - Motorized Recreation Opportunities – Trails by Forest Type (in miles).

Geographic Area	Backcountry			General Forest Area		Total
	Wilderness Trails	Non-wilderness Non-motorized Trails	Non-wilderness Motorized Trails	Non-motorized Trails	Motorized Trails	
Grand Mesa	0	46	40	52	82	220
Gunnison	420	291	236	141	118	1,206
North Fork Valley	122	53	9	72	22	278
San Juans	122	97	21	110	18	368
Uncompahgre Plateau	47	105	47	104	131	434
Totals	711	592	353	479	371	2,506

As the number of users increase, the land can no longer recover from cross-country travel. As a result, travel management across the Forest is evolving to road and trail based activities and away from cross-country travel. Today, travel routes are being identified, designed, and managed for specific recreation opportunities rather than as a retro-fit of timber, energy, and reservoir roads. Currently, the Uncompahgre National Forest has a travel plan in place that restricts motorized and mechanized summer travel to designated routes. The Grand Mesa National Forest has a travel plan in place that restricts summer motorized travel to designated routes yet is silent on mechanized. The Gunnison National Forest has an interim travel plan in place that restricts summer motorized and mechanized travel to existing routes and is awaiting a route by route evaluation of those routes. Each of the travel plans leave open the option for future road and trail development.

Desired Conditions

A variety of recreation travel opportunities are available and multiple uses occur on travel routes. Single use trails are not the norm. The variety of uses and the multiplicity of categories, even within a single use, are too overwhelming to accommodate single use trails.

In backcountry non-motorized areas a variety of non-motorized recreation opportunities are provided in a natural setting. Improvements such as trailheads, trails, signs, and bridges that enhance the recreational opportunities may be present. Trails provide challenging hiking, horseback riding, or mountain biking opportunities. No road building (classified or temporary) occurs within the area. Noise from motorized use is a rare exception away from the area boundary. The ROS is semi-primitive non-motorized. Scenery is managed to provide landscapes which appear intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident.

Backcountry motorized areas are managed to provide a variety of summer motorized recreation opportunities on roads and trails in a natural-appearing landscape. Users will find varied levels of difficulty on off-highway-vehicle roads and trails. Road and trail densities are low, maintaining a high sense of interaction with the natural environment. Roads are primitive with native surfaces. Improvements to enhance recreation opportunities may include parking areas and interpretive, informational, and directional signs but improvements are minimal. Roads for non-recreation purposes, even temporary roads, are not suitable. The ROS is semi-primitive motorized. Scenery is managed to provide landscapes which appear intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident.

In roaded multiple use areas, a variety of resource activities occur of which recreation travel is one piece. Resource modification and utilization practices are evident but harmonize with the natural environment. The area often takes on a mosaic of development and resource evidence from highly modified areas to pockets of unmodified lands. Road development levels will be native surfaced high-clearance or will accommodate passenger vehicles. OHV travel is more common on Forest roads than on trails. Road and trail densities are moderate to high and interaction with the other users is to be expected. The ROS is roaded natural and scenery management ranges from appearing moderately altered to slightly altered.

Management Implications

Allocating motorized/non-motorized travel areas.

Identifying motorized areas where additional road/motorized trail construction would not be suitable.

Condition Gap

The current Plan does not address suitability for future motorized trail development for the majority of management prescriptions; nor does it address road and trail densities to preserve semi-primitive settings. The current Plan identifies 36 percent of the existing motorized backcountry lands to be managed for motorized recreation. The Plan does not

establish thresholds to retain the backcountry experience. Limits on road and trail densities for backcountry lands would ensure retention of motorized backcountry recreation opportunities.

Of the existing backcountry non-motorized lands, the current Plan identifies approximately 21 percent to be managed for non-motorized recreation opportunities. However, existing guidelines allow for the construction of roads and vegetation harvest within these prescriptions. Existing guidance for non-motorized backcountry lands is not sufficient to protect the recreation values of these lands.

Need for Change

Current management direction does not meet the needs of demand for recreation travel systems. The Forest Plan needs to develop guidelines that recognize, plan for, and maintain recreational travel needs. The semi-primitive settings, both motorized and non-motorized, require specific objectives, guidelines, and suitabilities that promote desired conditions for recreation travel.

Evaluate recreation travel needs and establish suitability and allocate motorized and non-motorized use areas for the Gunnison National Forest.

Performance Measures

- Quality of recreation opportunity for motorized, mechanized, and non-motorized users
- Miles of backcountry motorized trail (single track and double track)
- Miles of backcountry non-motorized trail outside of wilderness (mechanized and non-mechanized)

1.12 Travel (Winter)

Area of Analysis

Area of evaluation is the GMUG National Forest.

Condition and Trend

Increase in local populations has increased demand for winter sports opportunities across the Forest.

Advances in technology have opened terrain previously inaccessible to motorized users.

Motorized and non-motorized users are vying for the same terrain, particularly those areas with convenient road access and parking.

The listing of the lynx as an endangered species will restrict terrain that was previously open to motorized users.

Some area planning for winter travel has occurred on both the Uncompahgre and Gunnison National Forests. Although both forests currently have winter travel plans in place, a more recreation-focused analysis is needed.

The Grand Mesa National Forest has developed an in-depth recreation winter travel assessment and currently has implemented their winter recreation travel plan.

Desired Conditions

A diversity of recreation travel opportunities is available for over-snow travel.

In backcountry non-motorized areas, a variety of non-motorized recreation opportunities are provided in a natural setting. Improvements such as trailheads, trails, signs, bridges, huts, or shelters that enhance the recreational opportunities may be present. Trails provide challenging cross-country skiing, snowshoeing, or dog sledding opportunities. Noise from motorized use is a rare exception away from the area boundary. The ROS is semi-primitive non-motorized.

Backcountry motorized areas are managed to provide a variety of motorized recreation opportunities. Travel is over-snow and may be restricted to designated travel routes in certain locations. Users will find varied levels of difficulty on routes.

Management Implications

For lands outside of wilderness, the current Forest Plan has direction related to big game winter range and winter travel. Recent updated data from the Colorado Division of Wildlife has modified the known winter range lands and should be reflected in Forest Plan direction. The current travel management plans for each of the Forests do not account for the listing of the lynx as a threatened and endangered species.

Condition Gap

Current Forest Plan direction addresses winter motorized travel only for the big game winter range prescriptions and wilderness prescriptions.

Need for Change

Current winter travel identifies open travel in lynx habitat.

Winter recreation travel has not been analyzed in detail for the Uncompahgre and Gunnison National Forests.

User conflicts between motorized and non-motorized users are occurring in easily accessible areas.

Performance Measures

- Numbers of complaints from visitors addressing winter travel
- Quality of recreation opportunity for motorized and non-motorized users

1.13 Wildland Fire and Fuels Management

Area of Analysis

Wildland fire management on the GMUG occurs in an interagency environment. Some elements have been evaluated at scales beyond the GMUG forest boundary, incorporating information from BLM-public lands, State, County, municipalities, and private lands. Due to current data availabilities and incompatibilities, most of the condition and trend evaluations were limited to NFS lands within the GMUG.

Condition and Trend

Potential natural vegetation (PNV) types are particular climax plant communities that could potentially develop in certain areas based on soils, slope, aspect, climate, and elevation (see Vegetation Section in the CA). Each PNV type experienced a characteristic pattern of succession and natural disturbances (i.e., fires, insect outbreaks). The fire disturbance patterns are called fire regimes, which are characterized by fire frequency (years between fires) and severity (intensity or amount of overstory burned) (Schmidt et al. 2002). Five fire regimes have been defined. Table 1.13.A. describes each fire regime and lists the PNV types that are in each regime. Figure 1.13.A. displays the distribution of fire regimes on the GMUG.

Table 1.13.A. Fire regimes distribution on the GMUG NF.

Class	Frequency	Severity	Percent	Dominant Cover Types
I	0-35+ years	Low and Mixed	5	Ponderosa Pine-oak, Ponderosa Pine
II	0-35+ years	Replacement	12	Grass types, Cinquefoil, Sagebrush, Aspen
III	35-100+ years	Mixed and Low	32	Oak-serviceberry, Mtn. Mahogany, Pinyon-juniper-shrub, Aspen, Douglas-fir, Spruce-Douglas-fir-Fir
IV	35-100+ years	Replacement	3	Snowberry, Cinquefoil-grass-sedge, Lodgepole pine
V	200+ years	Replacement , mixed and low	41	Willow-alder, Pinyon-juniper woodland, Lodgepole Pine, Bristlecone Pine, Limber Pine, Cottonwood- Spruce, Spruce-fir-aspen,, Spruce-fir
None		Doesn't burn	7	Rock, Bare, Water

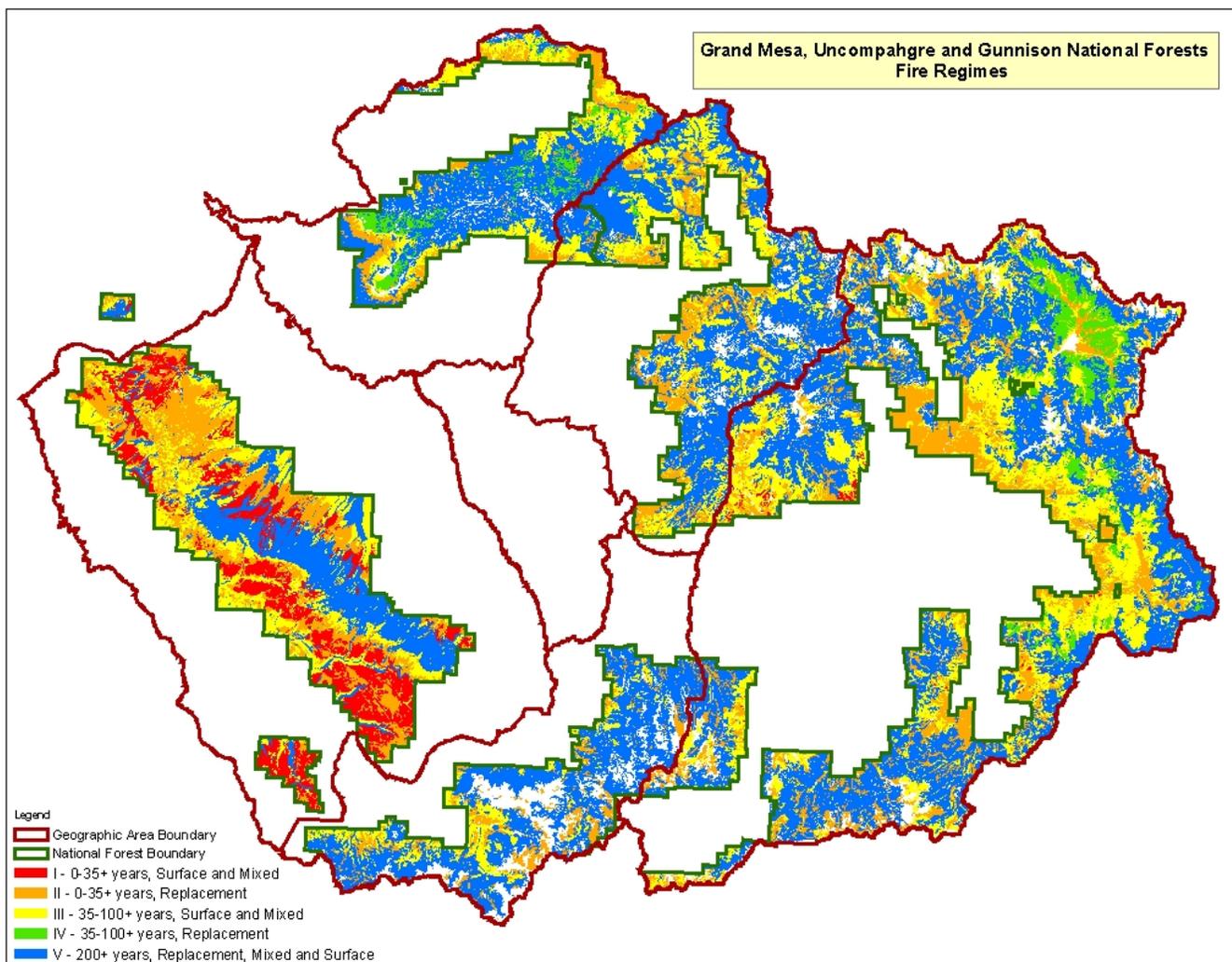


Figure 1.13.A. Fire regime distribution on the GMUG NF.

Fire Regime Condition Class (FRCC) describes the relative departure between current conditions compared to historic ecological conditions at a landscape level. Departures may be due to past management activities like fire suppression, timber harvest, grazing, and presence of exotic or invasive species. Three condition classes have been defined, as shown in Table 1.13.B.

Table 1.13.B. Fire Regime Condition Class descriptions (Schmidt et al. 2002).

Condition Class	Descriptions
1	Fire regimes are within the historical range and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within their historical range.
2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This may result in moderate changes to one or more of the following: fire size, intensity and severity and landscape patterns. Vegetation attributes have been moderately altered from their historical range.
3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This may result in dramatic changes to one or more of the following: fire size, intensity, and severity and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

Recent legislation (Healthy Forest Initiative/Healthy Forest Restoration Act) and national policy require the use of FRCC in project design and accomplishment reporting. Methodologies to determine FRCC are currently being modified. Results are a function of the scale used in the evaluation. Preliminary results for the GMUG and each Geographic Area are presented in Table 1.13.C. Areas with lower elevations and more frequent fire intervals (Uncompahgre Plateau) have been more impacted by past activity and have condition classes indicating more departure between current and historic conditions than areas with higher elevations and longer fire intervals (San Juans).

Table 1.13.C. Fire Regime Condition Class distribution by Geographic Area on the GMUG NF.

FRCC	Grand Mesa	Gunnison Basin	North Fork Valley	San Juans	Uncompahgre Plateau	GMUG
1	66%	42%	72%	64%	23%	52%
2	30%	18%	21%	14%	72%	32%
3	0%	32%	<1%	2%	6%	16%

Fire hazard relates to how fire behaves – its intensity and rate of spread. This is directly related to vegetation or fuel conditions, topography, and weather conditions. Fire hazard changes with changing conditions. Current vegetation conditions on the GMUG have been classified into fuel models as defined by Anderson (1982). Table 1.13.D. displays the distribution (as percentages) of fuel models by Geographic Area and for the GMUG.

Table 1.13.D. Fuel models (Anderson 1982) by Geographic Area on the GMUG NF.

Fuel Model	Grand Mesa	Gunnison Basin	North Fork Valley	San Juans	Uncompahgre Plateau	GMUG
0 – Rock and Water	5%	7%	6%	19%	0%	7%
1 – Short Grass	6%	19%	4%	19%	1%	12%
2 – Timber w/ Grass	23%	17%	39%	12%	16%	20%
4 – Shrubs (6 ft)	<1%	-	<1%	-	<1%	0%
5 – Brush (2 ft)	<1%	-	<1%	2%	7%	2%
6 – Dormant Brush	21%	5%	14%	3%	58%	19%
8 – Closed Timber Litter	20%	12%	15%	14%	9%	13%
9 – Hardwood Litter	1%	3%	2%	1%	4%	3%
10 – Timber	24%	36%	20%	29%	5%	25%
11 – Logging Slash	-	<1%	-	-	<1%	0%

To predict potential fire hazard (behavior) during extreme weather conditions, fuel model data was combined with topography and average extreme weather conditions using the FLAMMAP model. The results indicate where surface and crown fires would be expected under modeled weather conditions. Areas with fuel models that provide continuous fuels from the ground to the canopy will be displayed as having canopy fires; areas with fuel models without continuous ladder fuels are displayed as surface fires. Figure 1.13.B. displays the FLAMMAP fire hazard results for the GMUG.

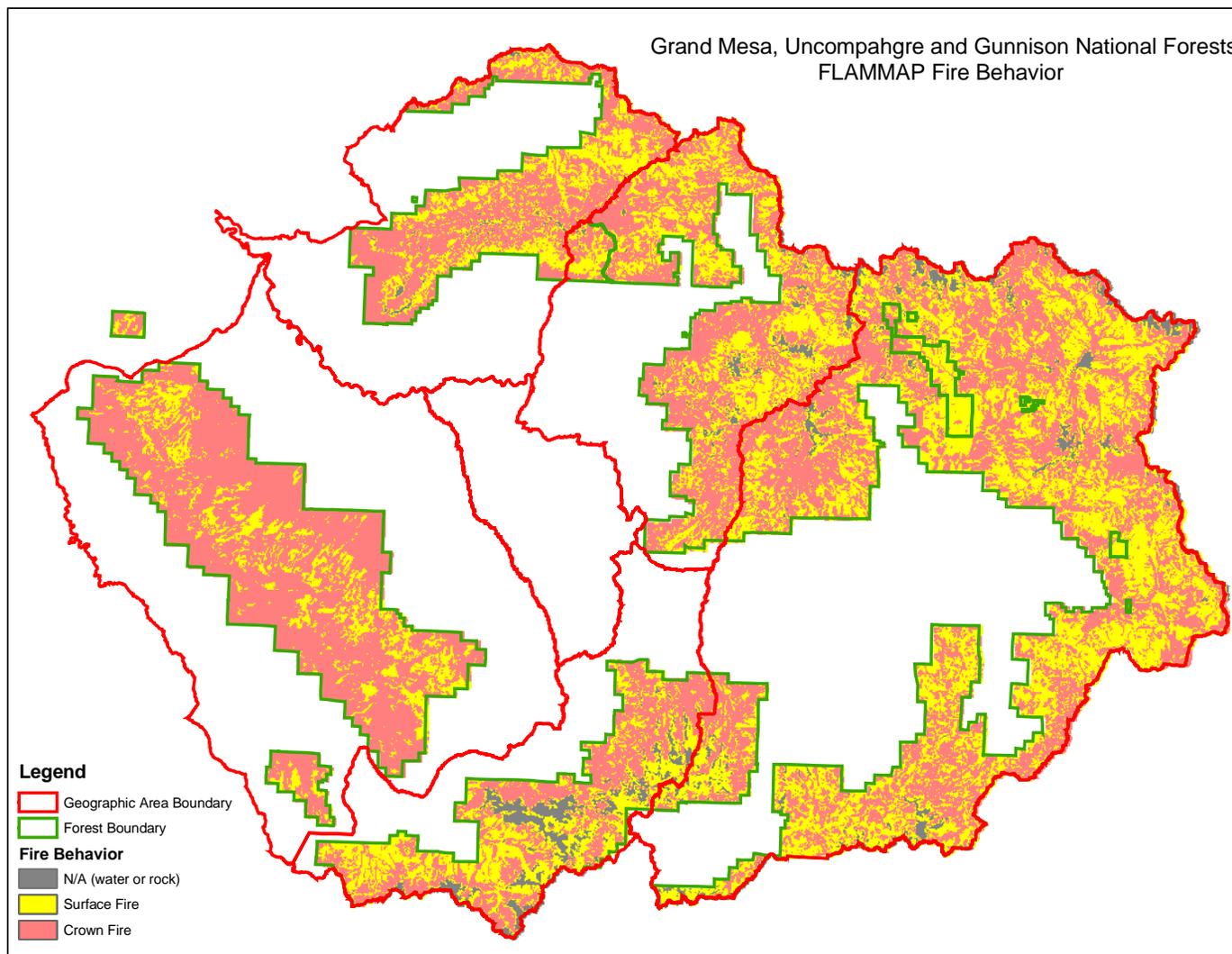


Figure 1.13.B. Fire hazards (results from FLAMMAP) for the GMUG NF.

Fire hazard (or fire behavior) needs to be considered relative to risk. Fire risk is determined from past fire activity. Table 1.13.E. summarizes fire activity from 1976 to 2002 for the entire GMUG. Figure 1.13.C. displays fire starts by cause.

Table 1.13.E. Fire activity, 1976 – 2002, for the GMUG NF.

Year	Lightning Caused		Human Caused		Total Fires	
	# of Fires	Acres Burned	# of Fires	Acres Burned	# of Fires	Acres Burned
1976	31	101	60	202	91	303
1977	35	110	68	83	103	193
1978	37	12	72	481	109	493
1979	18	17	36	92	54	110
1980	21	856	41	222	62	1,078
1981	33	50	65	6	98	56
1982	11	11	22	7	33	17
1983	9	1	18	0	27	1
1984	15	8	30	1	45	10
1985	11	1	19	0	30	1
1986	10	49	18	1	28	50
1987	9	12	18	92	27	104
1988	17	24	34	2,106	51	2,130
1989	25	44	49	235	74	278
1990	51	226	97	88	148	314
1991	14	44	26	942	40	986
1992	10	7	19	237	29	243
1993	14	39	26	10	40	49
1994	60	786	117	2	177	788
1995	7	3	13	42	20	45
1996	45	1,237	85	2	130	1,239
1997	13	16	25	3	38	19
1998	16	4	30	8	46	13
1999	20	14	40	1	60	15
2000	46	1,514	90	1	136	1,514
2001	37	461	71	1	108	462
2002	71	34,735	133	11	204	34,746
Total	686	40,381	1,322	4,876	2,008	45,258

Lightning starts are a function of weather and orographic patterns. Weather patterns move across the GMUG from the southwest to the northeast. The southwest quadrant of the Uncompahgre Plateau has the highest number of lightning-caused fires; the portion of the Gunnison Basin south of Highway 114 is in a rain shadow of the San Juan Mountains and has the lowest number. Human-caused starts are related to recreation pressure; areas having the highest recreation use have the highest human-caused starts (Taylor Park, Grand Mesa). Seasonal distribution of lightning vs. human-caused fires is also different. Lightning fires are more prevalent during July and August; human-caused fires peak during October (hunting season) (see Figure 1.13.C.).

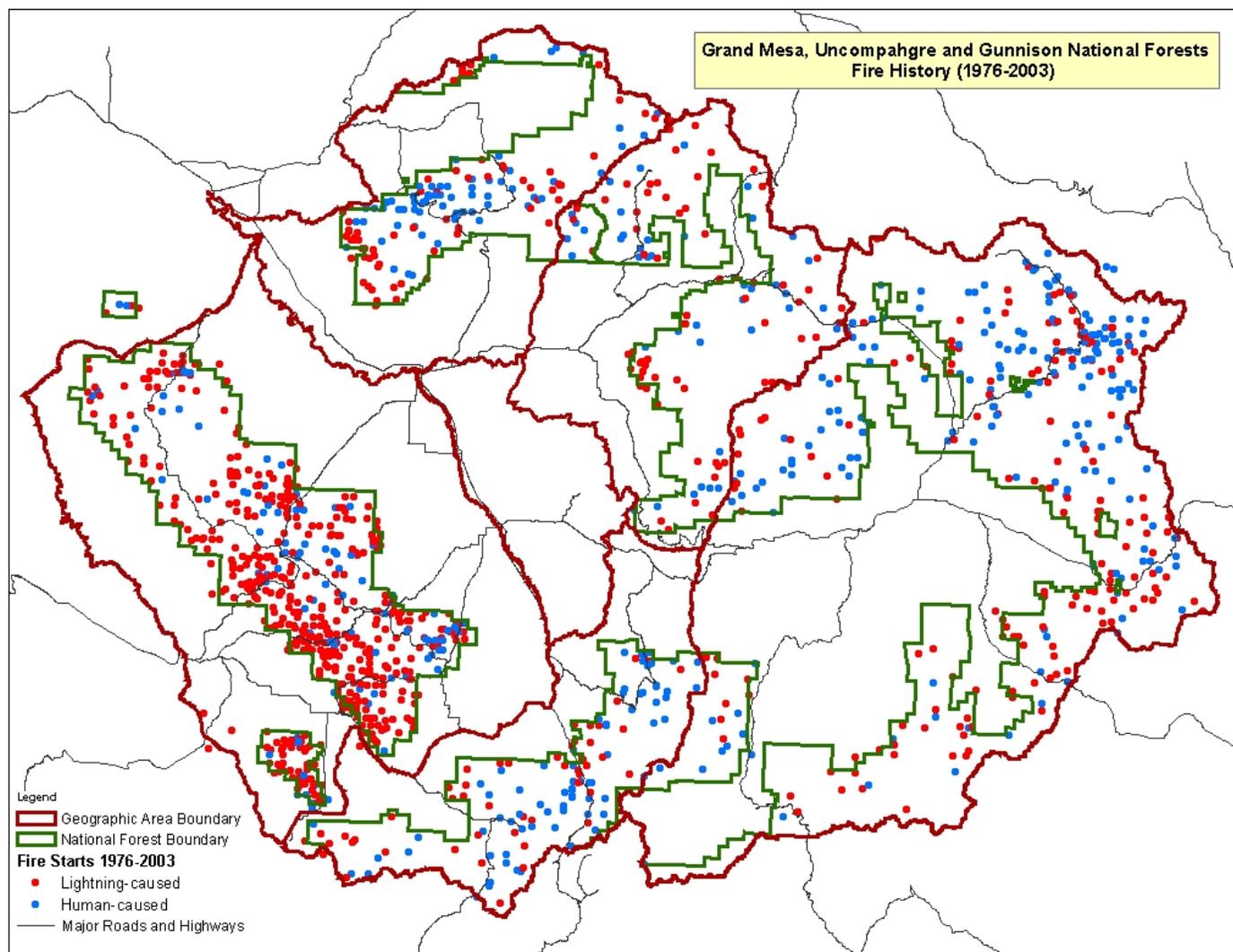


Figure 1.13.C. Fire activity, 1976 – 2002, for the GMUG NF.

To determine fire risk, the Forest was divided into areas with similar levels of fire activity. The Uncompahgre Plateau Geographic Area was divided along Ranger District boundaries. The Gunnison Basin Geographic Area was divided along Colorado Highway 114. The remaining Geographic Areas were each evaluated as separate units. All recorded fires were considered in predicting future fire activity or fire risk. Fire risk is calculated based on the number of fires starts on a per 1,000-acre basis over a ten-year period. Table 1.13.F. lists the fire risk for each area. Risk ratings are defined as:

- Low: 0 to 0.49 – projects a fire every 20+ years per 1000 acres
- Moderate: 0.5 – 0.99 – projects a fire every 11-20 years per 1000 acres
- High: > 1.0 – projects a fire every 0-10 years per 1000 acres.

The overall fire risk for the GMUG based on recent fire activity is low.

Table 1.13.F. Fire risk analysis (1976 – 2002) for GMUG NF.

Analysis Area	Acres	# of Ignitions	Lightning Ignitions	Human-Caused Ignitions	Fire Risk
Grand Mesa GA	321,400	101	50%	50%	0.12 - Low
Gunnison Basin GA, S of Highway 114	372,900	42	62%	38%	0.03 - Low
Gunnison Basin GA, N of Highway 114	981,700	252	46%	54%	0.09 - Low
North Fork Valley GA	501,700	82	63%	37%	0.06 - Low
San Juans GA	356,900	92	38%	62%	0.10 - Low
Unc. Plateau GA, Grand Valley District	214,700	89	79%	21%	0.13 - Low
Unc. Plateau GA, Norwood District	231,200	295	85%	15%	0.38 - Low
Unc. Plateau GA, Ouray District.	168,900	163	64%	36%	0.29 - Low

There is not a clear trend in the number of fires per year or per ten years. The number of fires is directly related to weather. There is a trend in fire size (acres burned), which has been increasing over time, with very large acreages burned in 2002. This is partially due to weather conditions (i.e., drought) but primarily due to vegetative conditions (continuous, dense and mature stands). Vegetation conditions are reflected in the condition class and the fire hazard shown above and are largely a result of 100 years of fire suppression efforts.

Until recently, fuel treatments to reduce fire hazard have been largely accomplished in connection with vegetation treatment (silvicultural) activities. This includes removing trees (reducing stand density), salvaging dead and down material, and prescribed burning. Vegetation treatments through prescribed burning are also being used extensively for

range and wildlife habitat improvement programs. Since 1955, approximately 103,300 acres have been treated with prescribed burning; 6,850 acres have been treated with some type of mechanical activity. (See Fire and Fuels Management Sections in the CA.)

As part of the National Fire Plan, much of the focus to reduce fire hazard is placed in the Wildland Urban Interface (WUI), areas where structures and other human developments meet or intermingle with undeveloped wildland or vegetative fuels. The WUI was mapped on the GMUG to include communities-at-risk (as identified in the Federal Register FR Vol. 66, No. 3, Pages 751-754, January 4, 2001), other private lands, powerlines and pipelines, electronic transmission sites, guard stations, and developed campgrounds, each buffered by one mile. The relative risk to all these WUI areas varies depending on surround vegetation, terrain, type, and density of development. Table 1.13.G. lists the percent of each Geographic Area and the GMUG as a whole, which falls within WUI. Figure 1.13.D. displays the WUI on the GMUG.

Table 1.13.G. Percent of GMUG and each Geographic Area within WUI.

	Grand Mesa	Gunnison Basin	North Fork Valley	San Juans	Uncompahgre Plateau	GMUG
% of Area in WUI	38%	30%	32%	35%	42%	30%

Fire management on the GMUG, excluding the Grand Valley Ranger District, is governed by the Montrose Interagency Fire Management Unit Board of Directors, which provides oversight and guidance on wildland fire management strategies and priorities. Board members represent the GMUG Forest and involve Ranger Districts (Norwood, Ouray, Paonia, Gunnison), BLM Field Offices (Uncompahgre and Gunnison), National Park Service (NPS) Units (Curecanti and Black Canyon), and local Colorado State Forest Service (CSFS) in the area. The Grand Valley Ranger District is governed by the Upper Colorado River Interagency Fire Unit Board of Directors, which includes representatives from both the GMUG and White River NFs, BLM Field Office (Grand Junction), NPS (Colorado National Monument), and local CSFS in that area. Fire managers from both units also coordinate with other local fire managers (County, Fire Districts, municipalities, Healthy Land Partnership) to develop and implement consistent fire planning.

The GMUG is currently working with its interagency partners to implement Fire Program Analysis (FPA) which is a new system of fire management planning and budgeting. Through this process attributes to be protected from fire (WUI, high public use areas, sensitive watershed, important habitat, cultural areas, special management areas, suitable timber) and attributes that can be enhanced by fire (wildlife habitat, wilderness) have been mapped to determine where different fire management options can be used.

The GMUG Fire Management Plan details the fire management program on the GMUG as approved in the current Forest Plan. This document describes fire management direction, organization, equipment, parameters for future actions, and anticipated costs. This document is adjusted each year to reflect changes in the annual planning process. This document also incorporates information from the FPA.

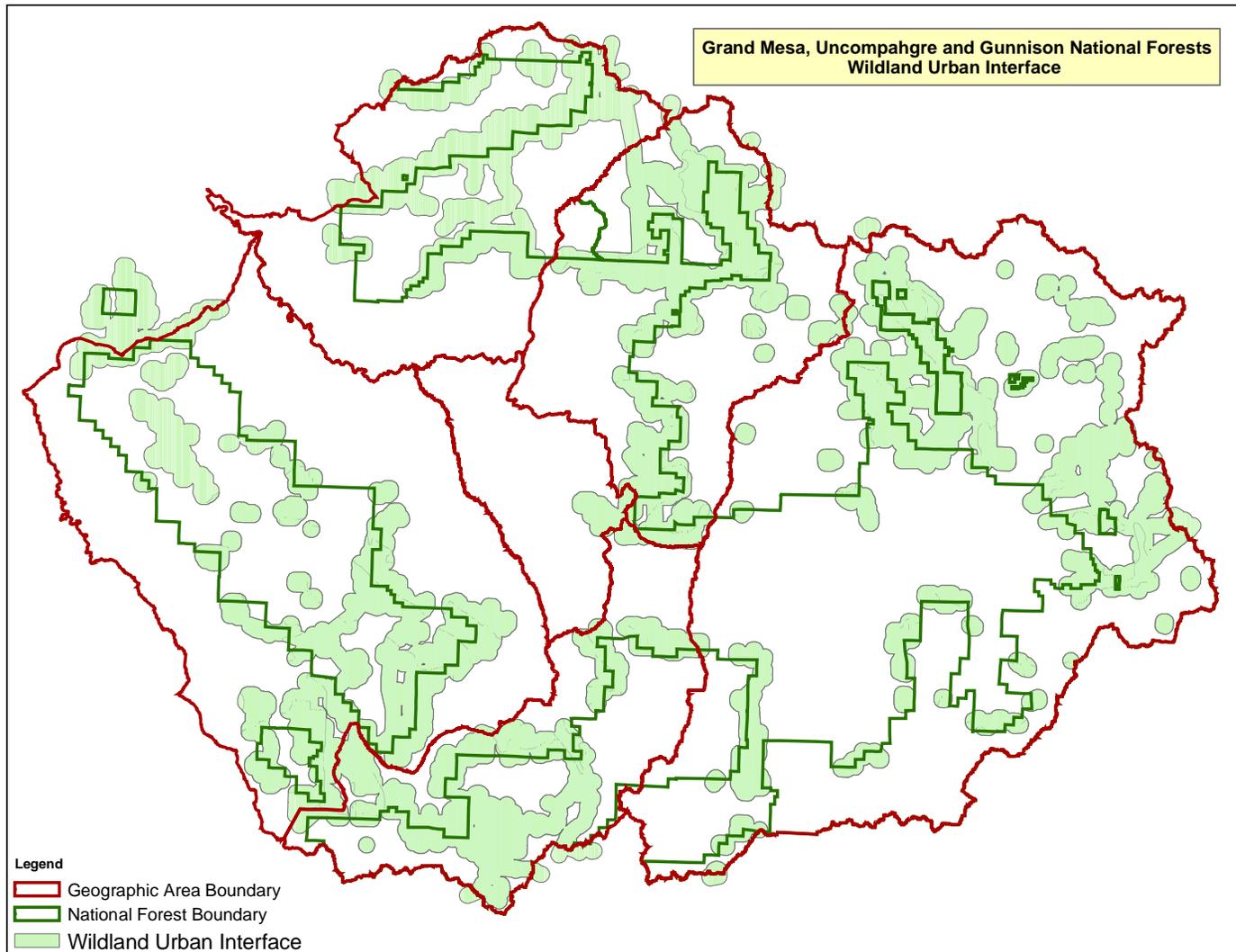


Figure 1.13.D. Wildland Urban Interface for the GMUG NF.

Desired Conditions

All fire management activities will implement the Federal Wildland Fire Management Policy (17 policy statements).

The current GMUG Fire Management Plan includes the following management goals (many of which are included in the Federal Wildland Fire Management Policy):

- Achieve a program where firefighter and public safety are the highest priority in every fire management activity.
- Implement management practices, including prescribed fire, which will move all affected landscapes toward desired vegetation composition and structure.
- Maintain an efficient and effective organization for the suppression of wildfires at a minimum cost consistent with the values at risk.
- Efficiently utilize fire suppression resources in an interagency setting with focus on reduced cost of operation for all cooperators.
- Create an integrated approach to fire and resource management across the landscape and agency boundaries. This approach will be designed to meet desired outcomes.
- Provide a program that fosters interagency interaction, cooperation, and effectiveness for all fire management activities. The program should be evident within all levels of the agencies, cooperators, and other public entities.
- Work collaboratively with other agencies and cooperators to identify values at risk and use the appropriate management options to reduce fire hazard and risk.
- Work collaboratively with cooperators and counties to identify communities at risk in the Wildland Urban Interface and develop plans to reduce fire hazard and risk and foster stewardship.

Condition Gap

Current Forest Plan direction does not include current national fire management policy, direction, and terminology.

Fire management options under the current Forest Plan are limited to suppression and fuels reduction. Wildland fire use (allowing naturally ignited fire to burn to achieve resource objectives) is not allowed under the current Plan. All wildfires must be suppressed.

Areas in condition classes 2 and 3.

Management Implications

Past fire suppression efforts have contributed to current dense vegetation conditions with increased fuel loads. There is increased potential for fires of higher intensity and larger size than would have occurred under historic fire regimes. Risk to human safety and detrimental effects to ecological and economic values are increased under these conditions. As the definition for FRCC 3 above states, key ecosystem components are at risk of being lost if uncharacteristically intense fires occur.

The focus of fire and fuels management activities will be on WUI areas to reduce the fire hazard in and around these valuable resources. Ecological risk (FRCC 2 and 3) exist on portions of the Forest outside of the WUI.

Risks to Achieving Desired Conditions

Current vegetation conditions may limit available options for response to wildland fire. Mechanical treatments to reduce fuel accumulations may first be needed before fire can be used.

State smoke permit requirements may limit the amount of land that can be treated in any given period.

Budget and available personnel may limit project planning and implementation.

Need for Change

Current Federal Wildland Fire Management policy, direction, and terminology needs to be included in Forest Plan direction and in annual Fire Management Plans. Seventeen policy areas need to be incorporated into desired condition statements, objectives, guidelines, and performance measures.

Need to incorporate the Accelerated Vegetation/Watershed Restoration Plan, Ten Year Master Strategy (FY04-14) which includes an integrated program of vegetation treatments designed to reduce hazardous fuels and improve fire regime condition class in WUI, forest intermix, and important watershed on the GMUG.

The revised Plan needs to identify areas suitable for wildland fire use.

Need to incorporate desired conditions, objectives, and strategies developed through the FPA process into the Forest Plan. The revised Plan needs to identify which areas are suitable for different appropriate management response options.

Need to work with interagency partners to develop compatible base data.

Performance Measures

- Number of wildfires, cause, and size
- Number of wildfires controlled during initial attack
- Number of wildfires not controlled during initial attack
- Cost of fires controlled during initial attack
- Cost of fires not controlled during initial attack.
- Acres treated in WUI
- Acres treated in condition class 2 or 3 in fire regimes 1, 2, or 3 outside of WUI
- Acres treated to reduce hazardous fuels with by-products utilized (volume in MCF/MBF, tons per acre)
- Acres brought into stewardship contracts
- Additional measures are listed in Appendix D of the Federal Wildland Fire Management Policy

1.14 Locatable and Salable Minerals

Area of Analysis

The characterization of locatable and salable minerals is based only upon lands within the proclaimed boundaries of the GMUG National Forest.

Condition and Trend

The exploration, development, and production of locatable minerals (most metallic and some industrial minerals) are governed by the Federal General Mining Law of 1872, while salable minerals (gravel, landscape material, rip rap etc.) are governed by the Federal Materials Act of 1947. A detailed mineral resource assessment for the GMUG NFs has been completed by the USGS (Bankey, 2004), which is included in the forest Comprehensive Assessment. The GMUG NFs lie within the Colorado Mineral Belt, which although historically significant, has diminished greatly in terms of its economic significance (Day and Bove, 2004).

Activities related to locatable minerals occur in response to the supply and demand forces of national and global commodity markets. At present, there is no active production occurring on the GMUG NFs. According to the Bureau of Land Management's Lands and Minerals System (LR2000) there are approximately 3,300 unpatented mining claims on the forests. There are currently 40 active Plans of Operations in place or under review.

Salable minerals (gravel, rip-rap, landscaping material, fill etc.) disposal on the forest satisfies agency maintenance and project needs (roads, facilities, campgrounds etc.), or those of other governmental agencies or entities. Annual use of those materials typically ranges from 5,000 to 10,000 tons. Salable mineral related activities have primarily been driven by regional or local trends, although they may be indirectly affected by broader market forces as well.

Overall, mineral related activities are dependent upon industry-initiated proposals, which are influenced by dynamic market forces that are difficult to predict. However, the extent and level of locatable mining interest is expected to remain about the same in the near future. Within that context, exploration, development, and production of locatable mineral resources in one or more specific locations may occur, requiring NEPA analysis and documentation (an EA or EIS) and compliance administration. However, the small number of such operations over the past ten years does not suggest large, significant projects in the foreseeable future. Demand for saleable materials is expected to increase due regional population growth and the additional infrastructure needs of expanding oil and gas development.

Desired Conditions

Opportunities for orderly and environmentally sound mineral exploration, development, and production are provided in areas identified as open for mineral entry and in areas of valid existing rights. Mineral exploration, development, and production activities leave as small a footprint on the land as possible consistent with mineral laws and valid existing rights. Lands disturbed in conjunction with mineral management activities are reclaimed to stable and productive conditions to meet management area desired conditions, multiple-use goals, and any specific resource needs identified during project-level NEPA analysis.

Management Implications

A significant discovery or mining proposal could require a one-time program change, including earmarked funding and additional minerals specialist assistance.

Locatable mineral-related activities may occur in any Theme when based on valid existing rights and a project-level decision.

Salable mineral development is generally inconsistent with the goals for Themes or Management Areas 1, 2, 3, 4, 7, and 8.

Potential affects on species-of-concern or species-of-interest populations or habitat should be evaluated during proponent proposals.

Need for Change

Additional mineral withdrawal(s) may be needed to protect developed recreation areas, capital improvements, and designated lands (Research Natural Areas, Special Interest Areas, and National Historical Sites) during the Plan period.

Performance Measures

- The number of Plans of Operations for locatable and saleable minerals administered to standard each year

1.15 Oil and Gas

Area of Analysis

The characterization of leasable Oil and Gas mineral resources is focused largely upon lands within the proclaimed boundaries of the GMUG National Forest.

Condition and Trend

National Forest System lands within the GMUG encompass portions of the Southern Piceance and Paradox gas-producing basins. Four delineated gas fields, the Grand Mesa, Ragged Mountain, Oil Well Mountain, and Coal Basin fields occur in the Southern Piceance Basin within the GMUG (CGS, 2003). Active natural gas production occurs from 12 natural gas wells in the Oil Well Mountain, Ragged Mountain, and Coal Basin fields. Gas production from these fields was about 1,000,000 cubic feet in 2004 according to the Colorado Oil and Gas Conservation Commission website. Nine other wells exist on the GMUG, but are not actively producing gas.

In 1993, the GMUG issued a Record of Decision (ROD) on the Oil and Gas Leasing EIS that made about 760,000 acres of land available and authorized for oil and gas (Figure 1.15.A). The decision also established stipulations required to protect local conditions and resources from effects of drilling and producing activities. These conditions and resources include, but are not limited to wetlands or riparian areas, certain types of wildlife habitat, and steep or unstable slopes. The specific areas where surface occupancy is stipulated in leases are identified in any project-level environmental analysis and decision for exploration and/or development of oil and gas resources. As of October 2006, there were about 146,000 acres of the GMUG under lease for oil and gas development, primarily on the Gunnison and Grand Mesa NFs, with a lesser amount on the Uncompahgre NF (Figure 1.15.B). An additional 260,000 acres have been nominated for lease across the Forests (Figure 1.15.B). About 38,500 of the nominated acres fall outside the area analyzed for oil and gas leasing in the 1993 EIS, and therefore cannot be offered for lease (Figure 1.15.B).

The 1993 oil and gas leasing analysis identified that about 900,000 acres of the GMUG had moderate to high potential for oil and gas resources (Oil and Gas Leasing EIS, Appendix E, 1993). In 2004, the BLM prepared a new assessment of oil and gas potential for the GMUG that revised that acreage to approximately 704,000 acres (Fowler and Gallagher 2004 and Spencer 2006). The primary changes were in areas on the western and northern edges of the West Elk Mountains and the southeastern portion of the Uncompahgre Plateau now considered to have low or no currently recognizable oil and gas potential.

Development of oil and gas leases (i.e., exploration and/or production well drilling) has been sporadic on the GMUG since the 1980s. Interest in oil and gas leasing on the GMUG began increasing in 2000 and has continued for the following six years

Natural gas companies with leases and/or operations on the GMUG currently hold approvals to drill nine exploration wells. In recent years, the GMUG has also received numerous proposals to recomplete existing wells as well as several natural gas pipelines to transport produced gas to processing facilities. According to BLM's 2006 Reasonably Foreseeable Development Scenario, natural gas drilling on the GMUG could include up to 88 new wells over the next 15 years.

Desired Conditions

Contribute to the energy needs of the nation by continuing to lease oil and gas resources. Oil and gas related exploration, development, and production activities leave as small a footprint on the land as possible consistent with mineral laws and valid existing rights. Lands disturbed in conjunction with those activities are reclaimed to stable and productive conditions to meet management area desired conditions, multiple-use goals, and any specific resource needs identified during project-level NEPA analysis.

Management Implications

Existing leases will be honored as valid existing rights, regardless of the Forest Plan Theme designation. Similarly, accessibility (stipulations) on existing leases cannot be changed except through specific project requests for waiver, exceptions of modifications.

Nominations to lease will be processed according to 1993 Oil and Gas Leasing Decision (in terms of both availability and accessibility) until such time that it is revised.

Need for Change

The Forest Plan will provide the framework and guidance for any future proposed revision of the 1993 Oil and Gas Leasing Decision. Availability or accessibility (existing surface use stipulations) may change based upon surface management emphasis, oil and gas occurrence potential, and updated surface resource information (e.g., wildlife habitat).

Any changes to the current oil and gas availability and accessibility decision will require a NEPA analysis to be consistent with the oil and gas regulatory framework.

In addition, to comply with the oil and gas regulations the GMUG will need to analyze those lands nominated for leases that fall outside the 1993 Leasing ROD, which could result in additional lands available for lease.

Performance Measures

None identified

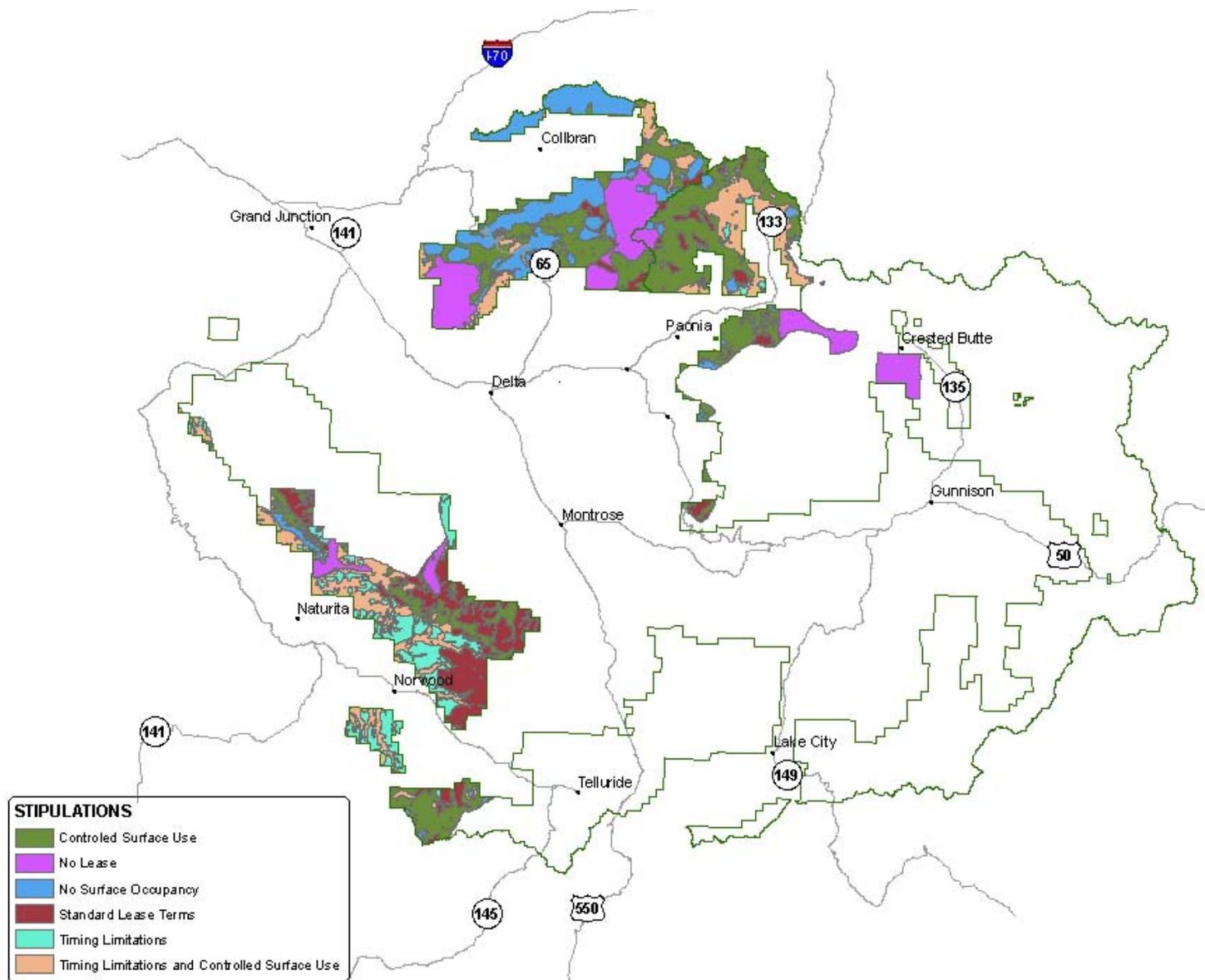


Figure 1.15.A. Lands Available and Authorized for Oil and Gas Leasing with Surface Stipulations (1993 Oil and Gas EIS).

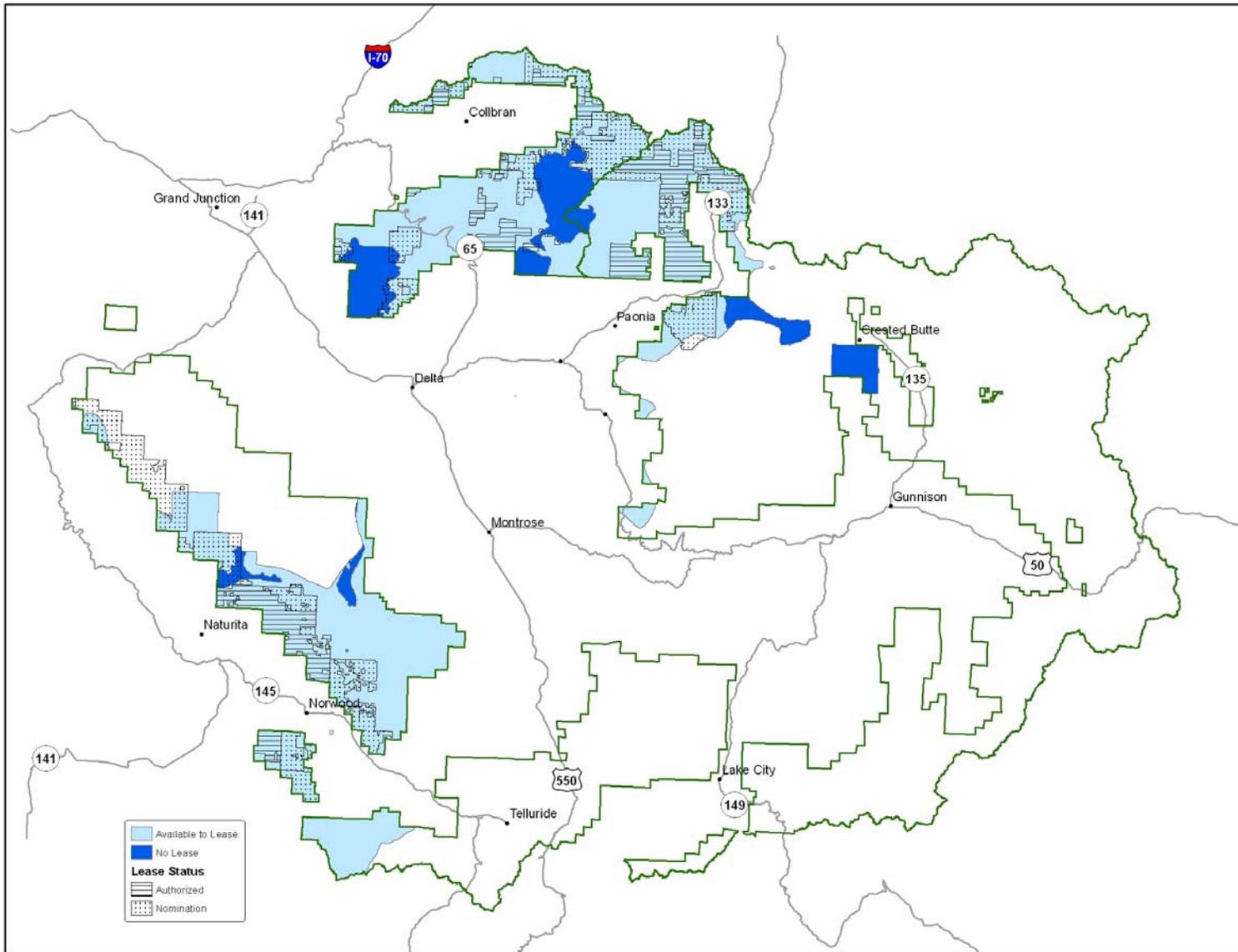


Figure 1.15.B. Lands Available and Authorized for Oil and Gas Leasing with Current Lease Status.

1.16 Coal

Area of Analysis

The characterization of leasable Coal resources is focused largely upon lands within the proclaimed boundaries of the GMUG National Forest.

Condition and Trend

Portions of the GMUG have high potential for the occurrence of coal in several geologic formations. Based on a coal resource evaluation completed by the USGS (Hettinger et al., 2004), the lands within the GMUG considered to have the geologic potential for coal resources to occur, are in areas where underlying strata are likely to have accumulated in a coal-forming environment and the potential coal-bearing rocks are less than 6,000 ft deep. According to the USGS evaluation, the GMUG contains portions of five recognized coalfields shown in Figure 1.16.A (Carbondale, Crested Butte, Somerset, Grand Mesa, and Tongue Mesa). The five coalfields contain a range of ‘non-compliant’ to ‘super-compliant’ coal (relative to the Clean Air Act standards for clean burning coal), although all contain some reserves that would at least be ‘compliant’ (ibid). (See also Coal Resource and Development Potential Report, 2006.)

Coal currently is mined from about 11,500 acres of active federal coal leases in the Somerset coalfield (Figure 1.16.B). The coal is mined exclusively by underground mining methods from three active mines in this coalfield. Surface activities associated with the existing coal mines include exploration drilling, degasification facility installation, ventilation shaft installation, access road construction, and resource monitoring facilities. Coal has been actively produced from this coalfield for over 100 years. The currently active mines produce about 17 million tons of coal annually, representing about 40% of the total coal tonnage mined in Colorado each year. Assuming similar production rates over time, existing leases would sustain roughly 12 years of production.

In 1999, coal from the North Fork Valley was shipped to power plants in Colorado, Kentucky, Illinois, Wisconsin, Michigan, Oregon, Minnesota, Missouri, Texas, Iowa, and Utah. Coal from the North Fork Valley is considered “compliance” coal under the Clean Air Act standards, and is desirable for its high burning capabilities, low sulphur, ash and moisture content. It is often used as a blend coal to ensure power plants meet emission standards.

Although some federal coal leases date to the 1960s, active coal mining on the GMUG began in the 1990s. Interest in exploring for and developing coal resources on the Forest has been increasing since the mid-1990s. This trend is expected to continue during the planning period. As of August 2006, there were 11, 000 acres under license for coal exploration. According to BLM, the Somerset coalfield will remain the principle area of interest for coal development in the next 10 to 15 years. Some activity may also occur in the Grand Mesa coalfield.

With respect to National Forest System lands, the laws and regulations governing federal coal reserves say that the Department of Agriculture shall include lands subject to leasing in a comprehensive land use plan. The major land use planning decision concerning the coal resource is to identify areas acceptable for *further consideration for coal leasing*, and to identify in the planning decision *conditions for the protection of non-coal resources*. The

land use planning document must also identify area of potentially recoverable coal reserves. Coal resource potential on GMUG lands were inventoried and assessed in a report titled “Coal Resource Potential and Development” (USDA Forest Service 2004, revised 2006). This assessment was prepared by the GMUG with consultation and review by the BLM (Sharrow, 2005).

The existing Forest Plan does not specifically identify lands for further consideration for coal leasing, or identify areas of potentially recoverable coal reserves. Further, the Unsuitability Criteria for Coal Mining as required by regulation was not completed at the Forest Plan level.

Desired Conditions

Identify areas with known recoverable coal reserves that may be developed during the life of the Plan. Make decision of which lands will be available for further consideration and remove those lands for which coal development and post-lease surface use is incompatible based on desired conditions for other resources. Assign compatible Themes to those lands with known recoverable coal resources.

Identify non-mineral resource conditions that could warrant specific lease stipulations or licensing conditions for use and protection of them.

Apply Unsuitability Criteria for Coal Mining at the Plan level.

Exploration, development, and production activities leave as small a footprint on the land as possible consistent with mineral laws and valid existing rights. Lands disturbed in conjunction with coal-related activities are reclaimed to stable and productive conditions to meet management area desired conditions, multiple-use goals, and any specific resource needs identified during project-level NEPA analysis.

Create the foundation for supporting the Energy Policy Act of 2005 and Forest Service Minerals mission.

Management Implications

Positive benefits to management of the coal program. No NEPA is required for coal availability decision.

The Forest Plan can clearly indicate areas that will be acceptable for further consideration for coal leasing.

Condition Gap

The existing Plan does not fulfill the regulatory requirements .

Need for Change

The Plan needs to address coal specifically to fulfill law and regulations.

Performance Measures

None identified.

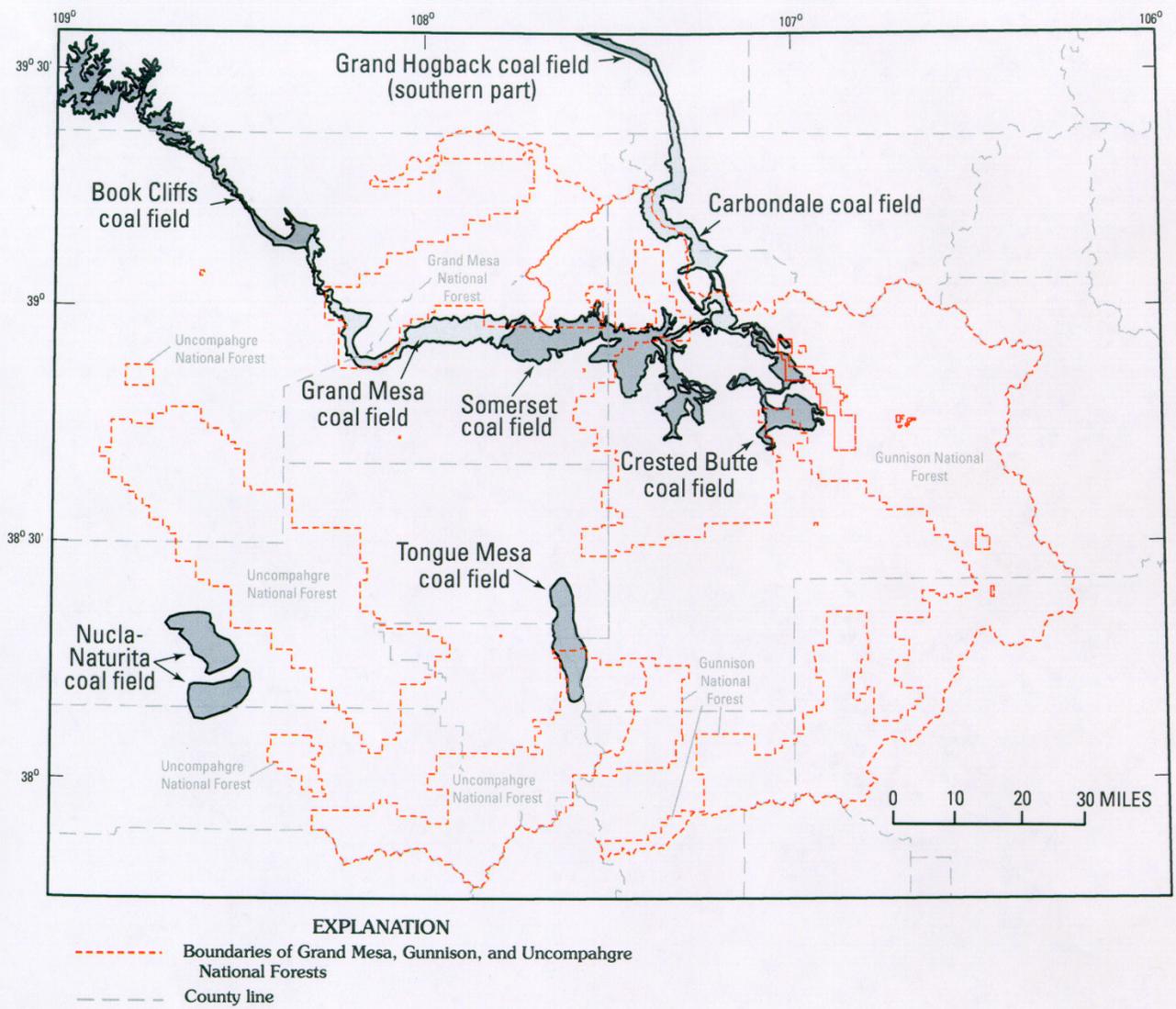


Figure 1.16.A. Location of coal fields in the GMUG greater study area (Hettinger, et al., 2004)

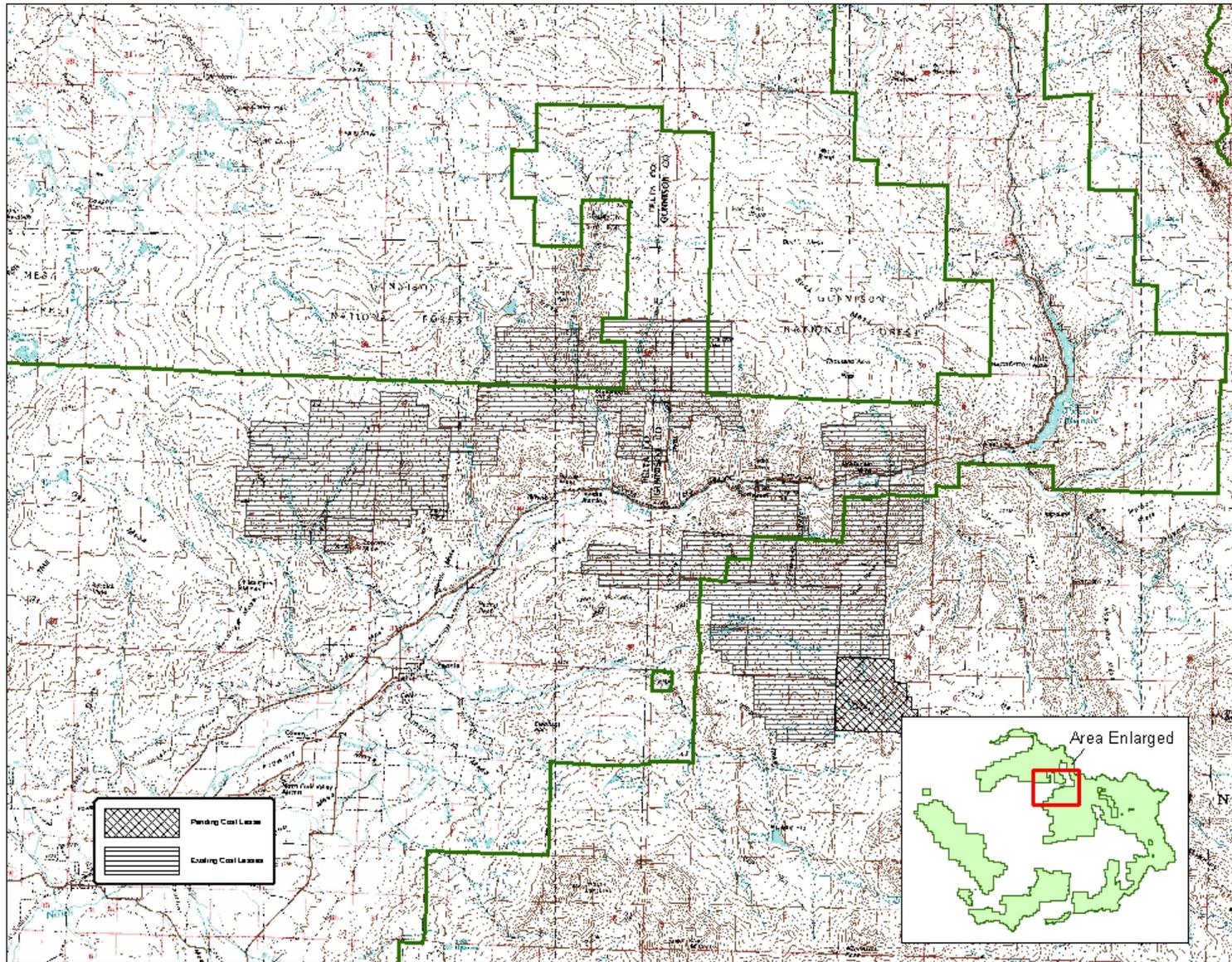


Figure 1.16.B. Existing and Pending Coal Leases (lease locations approximate, based on GIS data).

1.17 Abandoned Mine Lands

Area of Analysis

The characterization of Abandoned Mine Lands is based only upon lands within the proclaimed boundaries of the GMUG National Forest.

Condition and Trend

The GMUG Abandoned Mine Lands (AML) program has been in place since 1996 to address environmental damage and public health and safety concerns related to abandoned mines. Many of the sites originated during mining activities from the 1880s and 1890s through WWII. The initial program emphasis was on a field inventory of sites, including both abandoned mine adits (entrance) and tailings deposits across the forests. To date, approximately 600 abandoned mine sites have been inventoried and evaluated in terms of environmental and safety risks. Approximately 800 mine related features such as waste rock and mill tailings piles were identified that could harm environmental resources. And an additional 900 features such as adits, shafts, and highwalls were identified that pose public safety hazards.

Numerous factors pose challenges to effective treatments including the complexity of mineral and surface ownership or title, identification and financial capability of responsible parties, and the variation of site conditions and needs encountered. Because many sites involve multiple parties, the GMUG actively seeks to establish partnerships with the U.S. Environmental Protection Agency (EPA), and the State of Colorado.

For example, the Standard Mine site near Crested Butte was added to the National Priorities List in 2005, making remedial actions eligible for “Superfund” financial support. The site encompasses approximately 10 acres and is responsible for heavy metal contamination to Elk Creek a tributary of Coal Creek which provides drinking water for the Town of Crested Butte. EPA serves as the lead agency, but the GMUG, state, and local governments are participating in the determination of the cleanup needs.

The GMUG has prioritized and focused AML reclamation efforts in watersheds or sub-watersheds on the basis of the resource values threatened such as fisheries, or water quality degradation. In February 2006, the State of Colorado identified 11 stream segments totaling approximately 43.4 miles within the GMUG boundaries, that do not meet water quality standards due to metal concentrations related to historic mining activities (see following Table). These streams are identified on the State’s Clean Water Act Section 303(d) list, and require Total Maximum Daily Load (TMDL) determinations for each pollutant. Currently they are all considered a high or moderate priority by the State for TMDL development.

Table 1.17.A. State of Colorado 303d listed stream segments within GMUG Boundary.

Segment ID	Segment Description	Parameter	Miles
COGUSM03a	San Miguel River, Bridal Veil & Ingram Cks to Marshall Ck	Zn	0.4
COGUSM03b	San Miguel River, Marshall Ck to S Fk San Miguel	Zn	7.6
COGUSM06a	Ingram Ck, source to San Miguel River	Zn	2.1
COGUSM06b	Marshall Ck, source to San Miguel River	Zn	1.5
COGUUG10	Oh-Be-Joyful Ck, from wilderness to Slate River	Cd,Zn	1.2
COGUUG11	Coal Ck from Elk Ck to CB intake, plus Elk Ck	Cd, Pb, Zn	4.8
COGUUG12	Coal Ck and tributaries from CB intake to Slate River	Zn	0.9
COGUUN02	Uncompahgre River, source to Red Mountain Ck	Cu, Zn	7.5
COGUUN03	Uncompahgre River, Red Mountain Ck to Montrose	Cu, Fe, Zn	2.9
COGUUN06b	Red Mountain Creek from E Fk Red Mtn Ck to Uncompahgre R	Cd, Pb, Zn	5.8
COGUUN09	Canyon, Imogene, Sneffles Creeks	Zn	8.5

Desired Conditions

Continue to collaboratively work with stakeholders and partners to effectively and efficiently complete the remediation of Abandoned Mine Lands on the GMUG.

Management Implications

Project proposals will need to consider the scenic and historical values of mine related structures.

AML sites with public safety concerns within Management Themes 4 and 7 should be a priority for treatment because of high or concentrated public use.

Sites requiring road construction or reconstruction in Management Themes 1-3 will require a site specific Plan amendment.

Need for Change

The AML program area is relatively new and not addressed in the 1991 Plan.

Performance Measures

The number of AML projects completed each year.

1.18 Lands, Special Uses, and Land Trespass

Area of Analysis

Area of evaluation is the GMUG National Forest. This section covers a range of activities occurring on the forests that pertain to regulating or authorizing private or commercial uses of the NFS lands.

Condition and Trend

Utility and Energy Transmission Corridors and Communication Sites

Utility and energy transmission corridors along with communication sites are generally long-term commitments of NFS lands. These uses are most often for public utilities and some private natural gas pipelines. The Forest Service has identified at least ten major overhead electrical transmission lines (KV lines) crossing the GMUG. Several of these lines are Department of Energy, Western Area Power Association (WAPA) interstate transmission lines that tie power generation from the Curecanti hydroelectric facilities into the national power grid. There are also about five major local power transmission lines that cross NFS lands on the GMUG servicing local communities.

There are five buried natural gas transmission pipelines (not service lines for houses or businesses) on the GMUG. Some of these pipelines are collector lines from producing fields feeding larger interstate transmission lines and the others are part of larger natural gas transmission pipeline networks.

According to power industry officials, the major electrical transmission lines are at capacity and in order to meet projected energy demands in the future there is a need for increased capacity or additional electrical transmission lines in the western states. As part of the National Energy Policy, the Department of Energy and Bureau of Land Management are developing strategic level planning to address future energy related transmission corridor needs. The Forest Service is expecting to be able to utilize that planning to better assess the potential for future utility and energy corridor needs on NFS lands.

There are likely to be proposals for new utility transmission lines in the west, some of which may be across the GMUG or add capacity or lines to existing corridors. Based on both governmental and industry projections for natural gas production in the region and for the GMUG, during the life of the Forest Plan there will be proposals for new natural gas pipelines that would originate or cross NFS lands. The extent (miles) or number of new pipelines is speculative, but there are consistent expectations between federal regulators and energy firms that natural gas production in the North Fork Valley and Grand Mesa geographic areas and possibly the Naturita Division of the San Juan geographic area will spur increased demand for new or expanded transmission facilities.

There are approximately 12 communication sites located on prominent hills or peaks within the boundaries of the GMUG forests. These sites provide important communications links for a range of public and private users. There is little indication that there will be a demand for new communication sites on the GMUG, but improvements or expanded facilities may be proposed at any of the existing sites.

Land Adjustments

In the Forest Service land adjustments is a term relating to many actions that involve changes in control or ownership of land. There are several forms of land adjustment that characterize these changes, they include; (1) exchange, (2) purchase, (3) donation, and (4) disposal. Additionally, there are specific authorities that utilize different land adjustment actions. Some of these authorities relate to: small tracts, legislative direction for boundary adjustment or inholding acquisition, trespass, and rights-of-way. Generally all of the land adjustment actions can be utilized for these more specific authorities, but may have unique or specific details and procedures that must be applied by the Forest Service when completing those land adjustments.

The GMUG has had a land acquisition program for the Red Mountain Pass area on the Ouray and Norwood Ranger Districts. The Forest Service has acquired private lands through purchase and exchange in this area. Land acquisitions in this area have added approximately 9,000 acres of private land into the NFS over the past five years. Most of the private land involved was related to historic patented mining claims. The GMUG does acquire lands, through various methods of acquisition to provide rights-of-way for access to NFS lands.

There have been land exchanges occurring on the GMUG done to accommodate various resource management objectives. Most often exchanges are initiated by private land owners wishing to consolidate land holdings, provide for expanded land use in a particular area (i.e., runway expansion), or create better access or property line boundaries. Some cases involve minor land exchanges to better align property boundaries between private lands and NFS lands. In the past, most of these minor adjustments have occurred on lands adjacent to ski areas or private resorts. Under the existing GMUG lands program, there are usually about one or two land exchanges or acquisitions completed each year.

The GMUG expects to continue to acquire private lands within the San Juan mountain mineral belt area of the GMUG. This acquisition program is dependant upon continued funding and availability of willing sellers. The existing workload for land exchanges is expected to continue. Private land owner initiated land exchanges are expected to comprise the majority of exchange activity on the GMUG. The GMUG does not have any major boundary line adjustment objectives identified for completion in the future.

Rights-of-Way

The GMUG pursues rights-of-way that will provide the public more or better access to NFS lands. The GMUG Lands Program maintains a priority list for possible right-of-way acquisition. The GMUG attempts to acquire reciprocal access agreements with land owners when in-holding access easements are sought for their private lands. Without reciprocal access for the public the GMUG generally issues special use permits for in-holding owner access rather than an easement. There are some existing roads or trails leading to the GMUG that cross private lands, where in the past the public has been able to access the National Forest but, are currently denied access by the private land owners. Access related to activities or operations involving prior existing rights related to in-holdings, mineral leases, water rights are generally allowed.

The existing target for right-of-way acquisition is about ten per year. Because right-of-way negotiations are often difficult and sometimes contentious between land owners and the federal government they can take several years to complete. Therefore, it is extremely difficult to define objectives of accomplishment for this type of land adjustment.

Special Uses

The Forest Service authorizes a wide variety of public and private uses on NFS lands under special-use authorizations. Many of these special-use authorizations involve activities related to recreation (e.g., guiding, heli-skiing, hunting, tours, etc.) and are addressed in the recreation related sections of this document. The non-recreation special-use authorizations include cow camps, homes or cabins, roads, pipelines, events, access, filming, temporary occupancy, and other human-oriented, short-term activities on NFS lands. A key aspect of special-use authorizations is that they are authorizations for use over a specified time period (generally not to exceed 20 or 30 years but with provisions for renewal). In many situations the authorized use is for a much shorter time period (e.g., one season, one event, or the life of the project). On the GMUG, there are approximately 2,000 or more existing special-use authorizations, of these there are more than 700 related specifically to water (more than any other Forest in the national system). Many special-use authorizations require fees for the use. These fees are generally set amounts or calculated fees based on costs related to permit processing, lost production, or foregone resource values that result from the use or activity. There are some special-use authorizations that have had the fees waived due to the type of user group or authority for which the activity is authorized but generally are related to uses that are non-profit and occur for the public good.

The GMUG processes around 30 or more requests for non-recreation special-use authorizations each year. There are also some special-use permits that expire and are not renewed each year. Due to national policies or desired conditions developed in the Forest Plan some special uses may no longer be compatible with resource management objectives and phased out over time. Based on current trends for energy development and expanding residential occupancy of private lands adjacent to the GMUG, the Forest Service expects there will be increases annually in the number of requests for non-recreation special-use authorizations.

Land Trespass, Encroachment and Survey

The GMUG has over 3,400 miles of boundary between NFS lands and other lands. These other lands include private, federal and state lands that border the GMUG for which the Forest Service has no authority or jurisdiction. The rectangular survey network for lands west of the 100th Meridian where marked on the ground by section corners and other cadastral survey markers is the responsibility of the Bureau of Land Management's (BLM) Cadastral Survey. Where adequate survey monuments exist, the Forest Service may contract for or utilize Forest Service survey crews to resurvey and post landlines. Often the GMUG boundaries have been monumented and undergone some level of land survey, but not been marked and posted as Forest Service boundary. On the GMUG approximately 520 miles of boundary has been tied into the cadastral survey, marked, and posted.

When the BLM, Forest Service, or federal contractor surveyors resurvey or complete a survey in areas not previously monumented or have been poorly monumented, there can be adjustments to property lines and NFS land boundaries. Sometimes these adjustments result in unintentional trespass.

Trespass occurs when there is unauthorized use of NFS lands. Often these land trespass situations are non-malicious encroachments onto NFS lands from adjacent private lands. It has been estimated that for every mile of National Forest boundary there can be as many as three trespasses. While there is little data to suggest that level of trespass on the GMUG it is conceivably possible that there could be thousands of unauthorized uses on GMUG lands. The range of unauthorized use is varied, it can include such minimal use as a fence built slightly off-line to the construction and use of a road or a house on NFS lands. Often trespasses can be easily resolved by terminating the use, such as removing an authorized private sign or a stored piece of equipment, but in other more difficult cases it may require court proceedings and rulings before structures are either removed or issued special-use permits. Often trespass determinations require land surveys and much of the Forest Service survey work is related to trespass resolution.

The GMUG tries to eliminate about 15 or more land trespass cases per year and in so doing generally completes about ten to 20 miles of boundary survey each year with marked and posted boundaries. The GMUG anticipates that unauthorized use of NFS lands and encroachment problems will become an area of greater concern as development of private land in and adjacent to the GMUG intensifies and there are more requests for energy related development permits because funding has been steadily decreasing for survey work. That coupled with an expected reduction in Forest Service surveyors will further add to these concerns. These factors in combination would indicate that the existing situation related to survey needs and land trespass resolution will intensify over the life of the Forest Plan.

Desired Conditions

Utility and Energy Transmission Corridors

The existing utility and energy transmission easements should be managed as designated utility corridors with the general emphasis of a Theme 8.

Maintain utility corridors and communication sites so that the lines are fully energized with limited threat from fire, damage or vandalism.

Land Adjustments

Consolidate or improve NFS land boundaries, eliminate inholdings, and provide for more efficient and effective resource management within the boundaries of the GMUG forests.

Work with organizations, entities or other governments that can help to facilitate land adjustment activities (e.g., exchange, purchase, and donation) that will benefit the GMUG forests.

Rights-of-Way

Obtain reasonable public access to NFS lands.

Acquire rights-of-way for all classified Forest Roads and trails that cross private lands.

Reopen those roads and trails where historic public access to the GMUG forests has been denied or restricted by private land owners.

Recognize existing rights on NFS lands such as mineral rights, water rights, property access.

Special Uses

Provide for appropriate multiple-use activities on NFS lands with assurances and provisions that environmental integrity is maintained.

Land Trespass, Encroachment and Survey

Eliminate and resolve trespass and encroachment activities where such unauthorized activities are identified.

Complete land boundary surveys and appropriately post and mark GMUG forest boundaries when surveys are conducted.

Condition Gap

The GMUG expects to experience an increase in non-recreation related special use permit proposals due to increased energy development in the region and anticipates a greater workload associated with trespass and survey because of the increasing urbanization of private inholdings and adjacent lands. The Forest Service anticipates that there will most likely be a greater backlog related to possible trespass and survey needs. Additional strategies or objectives may be required to address emphasis or increased demand for lands-related actions due to the expected increase in energy exploration and development on the GMUG.

Management Implications

Utility and Energy Transmission Corridors

New energy related pipelines are expected and will create additional workload for the processing of permit applications beyond existing conditions. Direction contained in the Energy Policy Act (2005) requires prompt processing of energy related applications that could affect implementation or management activities in other resource programs on the GMUG.

Utility corridor designations would help to simplify the processing procedures for new pipelines or transmission lines utilizing those existing corridors.

Fuel treatment priorities may need to be adjusted to reflect the need to protect utility corridors from risk of wildfire damage.

Land Adjustments

The acquisition program for the Red Mountain area is expected to sunset in the next couple of years. There are no anticipated changes in the current management direction for other land adjustments and related activities, but there is always the potential of legislative directed adjustments. Most land exchanges will continue to be driven by private land owner requests and needs.

Rights-of-Way

The increased demand for road access related to the expected expansion of energy exploration and development will result in the issuance of more easements and related processing work. There are no anticipated changes to the current management direction for other than energy related rights-of-way.

Special Uses

The increased demand for access related to the expected expansion of energy exploration and development and the potential for new transmission facilities will result in more requests for special use permits and the related processing work. There are no anticipated changes in the current management direction for special-use authorizations.

Land Trespass, Encroachment and Survey

The continued decreases in funding and loss of experienced surveyors in the Forest Service may change the management direction for handling trespass and survey work and potentially create a greater backlog in trespass resolution.

Need for Change

Utility and energy transmission corridors need to be identified and managed as Theme 8 areas.

Fuel treatment priorities need to reflect an emphasis on reducing the threat of wildfire that can potentially disrupt service or facilities integrity of utility lines, energy transmission pipelines, and communication sites.

Risk to Achieving Desired Conditions

The increased energy exploration and development that is expected on the GMUG would create a demand for more right-of-ways, easements, or special use permits than the current staffing could process in a timely manner (pursuant to National Energy Policy direction) without adversely affecting other project proposals or applications.

Wildfire damages utility lines, pipelines, or communications sites before those areas receive needed fuel reduction treatments.

Funding levels do not sustain continuation of land adjustments in areas where the GMUG has identified needs for acquisition or boundary adjustment.

Performance Measures

- Annual land adjustment acreage
- Right-of-ways acquired for access to the GMUG
- New and renewed special-use authorizations on the GMUG each year
- Trespass and encroachment violations, tracking time, costs, and resource values involved in the trespass resolution
- Records of boundary survey miles

1.19 Water Use and Development

Area of Analysis

Area of evaluation is the GMUG National Forest and the region surrounding the forest. This section covers a range of water-related uses occurring on the forests that involve both the Forest Service and external users using, diverting, storing, or transferring water on NFS lands.

Condition and Trend

Water developments on the GMUG are an integral component of the local economic and social culture of the area. Many of the water diversion and storage facilities pre-date the National Forests. A majority of the streams on the GMUG that are capable of supplying water for agricultural purposes have been developed to either divert water to off-forest uses or store water to provide for more adequate supplies downstream later in the season. Of the 223 sub-watersheds (6th level HUC) on the GMUG, approximately 70 percent of them have some level of water development.

Runoff from NFS lands on the GMUG predominately flow into the Gunnison River sub-basin. The GMUG comprises the headwaters for the Gunnison River and portions of the GMUG are headwaters for the Plateau Creek watershed which drains into the Colorado River and the San Miguel River that is tributary to the Dolores River. Since the GMUG Forests play such a major role in the Gunnison sub-basin surface water supplies, the condition and trend of water use and future water demand are best characterized using data for that sub-basin. Runoff from NFS lands in the Gunnison River sub-basin contribute approximately 40 to 45 percent of average annual surface flow in the river. Conditions for the Gunnison River sub-basin are expected to be similar to conditions in the other sub-basins and therefore representative for these other sub-basins where GMUG forest runoff contributes to surface flow.

Almost all of the municipal and industrial (M & I) needs in the region surrounding the GMUG are met by surface water supplies. About 25 percent of the total surface water runoff is diverted for agricultural purposes with about a quarter that water being consumptively used by crops and livestock (CWCB, 2004). M & I consumption uses less than 0.3 percent of the surface water runoff (ibid). According to the State Waters Supply Initiative (SWSI) there are approximately 264,000 acres of irrigated farmland in the Gunnison River sub-basin that divert about 473,000 acre-feet of water annually (ibid). State Engineer's records indicate that about 208,500 acre-feet of water is diverted from streams on the GMUG for non-forest uses.

Projections for water demand and use were the focus of the Colorado Water Conservation Board's Statewide Water Supply Initiative (CWCB, 2004). That study showed about an 85 percent increase in M & I water demand from 2000 to 2030 and speculated that most of this increased demand would be met by the conversion of agricultural water use to M & I. The SWSI report also indicated that many of the major river basins on the east side of the Continental Divide have much greater unmet water demands than the Gunnison River sub-basin. These findings have continued to fuel speculation and interest in the potential of the Gunnison River sub-basin to provide additional water to the eastern slope basins where future water demands are much greater than in the Gunnison.

Based on the SWSI projections, surface water diversion from NFS lands is not likely to decrease nor are they expected to increase. Agricultural water use has a long history in the area and most of the feasible and economically sound water developments have been developed and are continuing activities for agriculture. There is little indication there will be many proposals to develop new diversions on NFS lands, but there may be greater interest in developing more surface water storage on the GMUG. There are several reasons for this, one because of the higher elevations of NFS lands, federally owned lands generally suitable for multiple use, and shorter distances to transfer water from the western slope rivers to rivers east of the Continental divide. The ability to capture more peak flow runoff not currently appropriated as well as provide for future M & I use makes new storage a desirable strategy for meeting future water needs. Based on public comments, there are local concerns that the Gunnison River sub-basin, because of its high water yield and relative low future water demand for M & I, may be a target for water development projects that transfer water to other basins where future water demands exceed yields.

The GMUG forests have water needs for both consumptive water use and non-consumptive water use. The Forest Service has as many 2,400 recorded water developments on NFS lands. The majority of these water developments are stock ponds that store small volumes of water for livestock and wildlife watering. The Forest Service also has water developments that include both surface and ground water supplies for developed recreation sites. The Forest Service will continue to develop water facilities for livestock and wildlife watering. Water availability and watering locations for grazing animals is an important component of resource management for both the animals and the related resource protection. Water availability for ecological values (e.g., fisheries, riparian) and social values (e.g., fishing, aesthetics, recreation) are also important water needs on the GMUG.

Non-consumptive water use on the GMUG is best defined by instream flows. In Colorado, the CWCB has the authority to file for instream flow water rights under its Instream Flow Protection Program (ISF Program). The state holds instream flow rights on approximately 1,110 miles of stream on the GMUG. These rights are minimum stream flows expected to preserve the natural environment to a reasonable degree¹. The Forest Service's non-consumptive water needs are not fully inventoried and are generally addressed at the project level based on the need to evaluate environment consequences associated with proposed developments or activities. There is increased interest by the Forest Service to pursue instream flows for the recovery and protection of aquatic species of concern, in particular the Colorado River cutthroat trout (CRCT) based on the agency's commitment to the *Conservation Agreement and Strategy for Colorado River Cutthroat Trout* (April, 2001). Those streams or reaches of streams where populations of CRCT exist or where reintroduction is desired would be logical targets for pursuing instream flow protection. There is a trend to increase efforts to maintain existing stream flows on many of the streams on NFS lands for aquatic species, baseline recreation and aesthetic values, and to sustain ecological processes.

¹ §37-92-102(3) C.R.S

Desired Conditions

Both consumptive and non-consumptive water needs are provided for on NFS lands.

Ecological and hydrologic integrity are sustained on streams while recognizing existing valid water rights and providing for off-forest water needs. Instream flow needs for baseline recreation, aesthetics, and ecological processes are incorporated into new water development planning and on-going water development operations.

Forest Service water rights are put to beneficial use and protected according to State statutes and all water right filings, proposed changes, or reassertions of water rights are reviewed to ensure Forest Service water rights are not harmed or jeopardized.

Groundwater availability and quality are maintained to provide for possible development while sustaining the associated groundwater-dependent ecosystem components such as springs, seeps, lakes, fens, wetlands, and riparian areas in a healthy and a fully functional condition.

Management Implications

Aquatic and hydrologic assessments need to be completed as part of the evaluation and decision making process for projects proposing new water developments to assess whether Forest Service water needs on those streams are being met or would be affected.

Tracking and record keeping related to Forest Service water use is necessary to ensure agency water rights are being put to beneficial use.

Responding to the monthly water resumes filed for new water rights, proposed water right changes or reassertion of conditional rights on NFS lands or that could potentially affect Forest resources, including aquatic species of concern needs to occur in a timely manner pursuant to the State Engineer's procedures.

Coordinate with State agencies, water users, stakeholders and other interested parties on ways to achieve instream flows or to meet Forest water needs when new water development projects may adversely affect the ability of the Forest Service to meet its resource management objectives and commitments.

Need for Change

Sustaining flow-dependent natural resources on NFS lands will require greater cooperation and coordination with State agencies, water users, stakeholders, and others to avoid resorting to unilateral federal action to meet instream flow and water needs on Forest lands. Greater utilization of existing state authorities, other agency programs, and collaborative processes is needed to achieve instream flows and meet Forest water needs for both terrestrial and aquatic resources.

Providing for more comprehensive aquatic and ecological assessments when evaluating proposed new water development projects or re-issuance of existing water development authorizations to determine water needs for NFS lands.

Risk to Achieving Desired Conditions

Collaborative processes or other agency's programs fail to provide adequate water to meet Forest needs necessitating the use of more contentious procedures (e.g., by-pass flows or restrictive water use conditions imposed on special use authorizations) could

delay or hinder the Forest Service's ability to protect and manage those flow-dependent terrestrial and aquatic resources on NFS lands due to legal challenges and court proceedings.

Lack of personnel and budget could potentially limit the agency's ability to track and record water use for those water rights held by the agency for Forest resources.

New water development projects that transfer water from one watershed to another where there is little or no return flow back into the watershed of origin has the potential to severely impact the natural hydrologic regime and limit the agency's ability to sustain aquatic ecology and flow-dependent natural resources.

Performance Measures

- Record and document water use for Forest Service water rights
- Review and comment, as appropriate, on all water resumes filed for new water rights, proposed changes, or reassertion of conditional water rights that affect NFS water rights
- Conduct inventories of existing water use, hydrologic, and biologic evaluations in the evaluation process for new water development proposals to determine Forest Service water needs
- Provide for adequate instream flows to sustain baseline recreation, aesthetics and ecological values on streams within the GMUG