



Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Intermountain Region

Manti-La Sal National Forest

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Manti-La Sal National Forest

Draft Revised Land Management Plan

Volume 1: Chapters 1-8



Manti-La Sal National Forest Title Page: Layout Credit – Autumn Ela. Top left, going clockwise – Mt. Mellenthin with wildflowers, Moab District; Joe’s Valley Reservoir, Price/Ferron District, photo Brandon Jensen; Brumley Arch, Moab District, photo Daniel Lay; Aspens in fall color, Moab District, photo Autumn Ela; Backcountry skiing La Sal Mountains, Moab District, photo Brian Murdock.

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Manti-La Sal National Forest

Draft Land Management Plan

Price, Utah

Lead Agency: U.S. Department of Agriculture, Forest Service

Cooperating Agencies: Bureau of Land Management
National Park Service

State of Utah
Carbon County, Utah
Grand County, Utah
Juab County, Utah
San Juan County, Utah
Sanpete County, Utah
Sevier County, Utah
Utah County, Utah
Grand Conservation District, Utah
Juab Conservation District, Utah
Price River Conservation District, Utah
San Juan Conservation District, Utah
Sanpete Conservation District, Utah
San Rafael Conservation District, Utah
Sevier Conservation District, Utah
City of Blanding, Utah
City of Monticello, Utah
City of Castle Valley, Utah

Montrose County, Colorado

Nations, Tribes, and Pueblos: Hopi Tribe
Navajo Nation
Pueblo of Acoma
Pueblo of Laguna
Pueblo of San Felipe
Pueblo of Tesuque
Pueblo of Zia
Pueblo of Zuni
Ute Indian Tribe of the Uintah and Ouray
Reservation
Ute Mountain Ute Tribe

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ACRONYMS AND ABBREVIATIONS

ADS — Aerial Detection Survey	MA — Management area
AIM — Assessment, Inventory, and Monitoring	MMBF — million board feet
AML — abandoned mine lands	MMCF — million cubic feet
AUM — allotment use months	NEPA — National Environmental Policy Act
ARPA — Archeological Resources Protection Act	NRT — National Recreation Trail
BENM — Bears Ears National Monument	NR— National Register Sites
CCF — One hundred cubic feet	NRM — Natural Resource Manager
CFR — Code of Federal Regulations	NVUM — National Visitor Use Monitoring
CSE — Common Stand Exam	MVUM — Motor Vehicle Use Map
CWD — Coarse woody debris	OBJ — Objective
DBH — Diameter at breast height	PAOT — People at one time
DC — Desired condition	PFC — Proper Functioning Condition
DCH — Designated Critical Habitat	PTSAR — Periodic Timber Sale Announcement Report
ESA — Endangered Species Act	ROS — recreation opportunity spectrum
FACTS — Forest Service Activity Tracking System	RMZ — Riparian management zone
FIA — Forest Inventory Analysis	RNA — Research Natural Area
FIRE — Fire management	ROS — Recreation opportunity spectrum
FSH — Forest Service Handbook	SCC — Species of conservation concern
FSM — Forest Service Manual	SDI — stand density index
GA — Geographic area	SMS — Scenery Management System
GD — Guideline	ST — Standard
GL — Goal	TE — Threatened and endangered species
GLORIA — Global Observation Research Initiative in Alpine Environments	TIM — Timber Information Manager
HUC — Hydrologic unit code	TRACS — Trail Assessment Conditions Surveys
IFTDSS — Interagency Fuel Treatment Decision Support System	USDA — U.S. Department of Agriculture
IRA — Inventoried Roadless Areas	USFS — United States Forest Service
InSAR — Interferometric Synthetic Aperture Radar	USMP — Unstable Slope Management Program
LANDFIRE — Landscape Fire and Resource Management Planning Tools	VCMQ — Vegetation Classification, Mapping, and Quantitative Inventory
LiDAR — Light Detection and Ranging	VSS —Vegetation Structural Stage
	WCF – Watershed Condition Framework

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CHAPTER 1. INTRODUCTION

The Manti-La Sal National Forest Land Management Plan (commonly referred to as the *plan* or *forest plan*) guides the Manti-La Sal National Forest (Manti-La Sal NF or *the forest*) in fulfilling its stewardship responsibilities to best meet the current and future needs of the American people. This plan provides the vision, strategy, and constraints that guide integrated resource management, provide for ecological sustainability, and contribute to social and economic sustainability on the Manti-La Sal NF and the broader landscape. Though it provides strategic guidance, it does not make any decisions regarding the regulation of public activities on or access to Federal lands; the management of individual roads, trails, or areas associated with the Travel Management Rule (United States of America, 2023)36 CFR 212); or permitted activities, such as outfitters and guides or grazing. These activities, projects, and site-specific management actions are managed through separate administrative and regulatory processes. Similarly, no decision regarding oil and gas leasing availability will be made. However, plan components may be brought forward or developed in the future that will help guide decisions that may be necessary regarding public and permitted activities and oil and gas leasing availability. Some actions (such as hunting regulations), although important, are outside the Forest Service’s authority and cannot be included in the forest plan.

The forest plan serves as a guide for management of the Manti-La Sal National Forest for the next fifteen to twenty years. Forest plans are prescriptive documents that set desired conditions, objectives, standards, and guidelines for managing resources. This plan:

- Is strategic in nature. It does not include project- or activity-level decisions. Those decisions are made later, only after more detailed analysis and further public involvement.
- Is adaptive. New information and knowledge can be analyzed, and the Forest Plan amended, if necessary and appropriate, at any time.
- Honors the continuing validity of private, statutory, or preexisting rights.

The forest plan provides direction for working with tribal, federal, state, and county governments to coordinate an all-lands approach that considers the role of the Manti-La Sal National Forest within the broader landscape of southeastern Utah and southwestern Colorado.

Legal and Regulatory Framework

The revision is being completed under the legal framework of the National Forest Management Act and the National Forest System Land Management Planning regulations, commonly referred to as the 2012 Planning Rule.

National Forest Management Act (NFMA)

Under the NFMA, forest plans should be revised at least every fifteen years. In addition, the law requires forest plans to “identify lands within the management area which are not suited for timber production,” and to review such determinations at least every ten years.

2012 Planning Rule

The Forest Service’s 2012 Planning Rule (United States of America, 2023)219 provides the process and structure to create land management plans for National Forest System (NFS) lands across the nation. The rule establishes a three-phase process: assessment, plan development or revision, and monitoring. The intent of the planning framework is to create responsive land management plans that informs

integrated resource management and allows national forests to adapt to changing conditions. The 2012 Planning Rule also strongly emphasizes partner and public participation through all three major phases of the planning process.

Other Laws

In addition to the National Forest Management Act, many other laws and regulations apply to management of the national forests including, but not limited to, the Clean Air Act, Clean Water Act, Endangered Species Act, Wilderness Act, and National Historic Preservation Act. These laws are generally not repeated or referenced in a forest plan. Additional direction and policy for management of national forests are also provided in executive orders, the Code of Federal Regulations, and the Forest Service directives system, the latter of which consists of Forest Service manuals and handbooks. Such direction is also not repeated in a forest plan.

References to these documents and agency best management practices may be included in the management approach section for each resource area and will be included in an appendix that is in progress.

Forest Plan Organization

Chapter 1. Introduction describes the purpose of the forest plan; introduces the spatial context where management direction in this document will apply, known as the plan area; and provides an overview of the Manti-La Sal National Forest, its distinctive roles and contributions, the legal framework and process that guide forest planning, the need to change the forest plan, and how the forest plan is implemented.

Chapter 2. Forestwide Direction includes forestwide components in the form of desired conditions, goals, objectives, standards, and guidelines for all resource areas; see the next section for definitions of plan components. Plan components are typically located in the relevant activity section of the plan, but when the components pertain to multiple resources, they are described in only one of the applicable resource sections; 'See Also' sections list other relevant resources where applicable plan components may also be found.

Chapter 3. Designated Area Direction describes how plan components apply to specific parcels of NFS land. Designated areas are primarily designated by statute, but some categories may be established administratively through the Federal executive branch. Plan components for a designated area may differ from forestwide guidance and must provide for appropriate management of the designated area, based on the applicable authorities and the specific purposes for which the area was designated or recommended for designation. Plan components in this chapter may differ from forestwide guidance by:

1. Constraining an activity where forestwide direction does not; or
2. Constraining an activity to a greater degree than forestwide direction

Forestwide plan components are applied, unless there is management direction for a designated area that differs from the forestwide direction.

Chapter 4. Management Area Direction includes desired conditions applicable to one of the two management areas that have been identified in locations across the Manti-La Sal. Management areas help define the unique nuances in the forest that are reflected in localized priorities and components that differ from the forestwide direction.

Chapter 5. Geographic Area Direction includes desired conditions applicable to one of four geographic areas that have been identified in locations across the Manti-La Sal. Geographic areas help define the

unique nuances in the forest that are reflected in localized priorities and components that differ from the forestwide direction.

Chapter 6. Forest Plan Monitoring Program consists of a set of monitoring questions and associated indicators to evaluate progress toward achieving desired conditions and objectives, and how well management requirements, such as standards and guidelines, are being applied. The monitoring strategy provides a framework for subsequent monitoring and evaluation designed to inform adaptive management.

Chapter 8. Glossary of terms used in the forest plan.

Several appendices provide additional information:

- **Appendix 1:** Timber Suitability
- **Appendix 2:** Priority Watersheds
- **Appendix 3:** Coal Unsuitability
- **Appendix 4:** At-Risk Species
- **Appendix 5:** Scenic Character

Forest Plan Components Definitions

Forest plan components guide future decision-making for projects and activities, are required in the forest plan by the 2012 Planning Rule and are the main substance of this document. They include desired conditions, goals, objectives, standards, guidelines, and suitability of lands. Plan components should (1) provide a strategic and practical framework for managing the Manti-La Sal NF, (2) be applicable to the resources and issues of the forest, and (3) reflect the forest's distinctive roles and contributions. The set of plan components must provide for social, economic, and ecological sustainability and multiple uses. Plan components were developed collaboratively with input from a variety of external and internal stakeholders, with broad interdisciplinary representation. Plan components may be used to carry out laws, regulations, or policies and although the plan does not need to reiterate existing law, regulation, or policy, some are repeated here for emphasis. Plan components must be written to allow monitoring to test their effectiveness and verify the assumptions on which they are based. They will guide the development of future projects and activities but are not commitments to act or final decisions approving projects and activities. They guide and constrain the Forest Service, not the public. Desired conditions are required for every resource section, while the remaining plan components are not necessarily in every resource section. The six plan components are:

Desired Conditions are descriptions of specific social, economic, or ecological characteristics of the Manti-La Sal National Forest, toward which management of the land and resources should be directed. They are not commitments or final decisions approving specific projects or activities; rather, they guide the development of projects and activities. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement, but not include completion dates. In some cases, desired conditions may already be achieved, while in other cases, they may only be achievable over hundreds of years.

Goals are broad, general statements of intent, usually related to process or interaction with the public; they do not include completion dates like objectives. Plans are not required to include goals. When goals are present in resource sections, the forest is primarily using them to identify statements of intent where partnership or actions with non-Forest Service individuals, groups, or agencies would be necessary to accomplish the outcomes.

Objectives describe how the Manti-La Sal NF intends to move toward the desired conditions. An objective is a concise, measurable, time-specific, and fiscally-achievable statement of a desired rate of progress toward a desired condition or conditions. Objectives have been established for the work considered most important to address the needs for change and make progress toward desired conditions. They also provide metrics for evaluating accomplishments.

Standards are mandatory constraints on projects and activities. A standard is established to help achieve or maintain a desired condition or conditions, to mitigate undesirable effects, or to meet applicable legal requirements. Standards differ from guidelines in that standards do not allow for any deviation without a plan amendment.

Guidelines are constraints on projects and activities that allow for departure from their terms, so long as the purpose of the guideline is met. Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. Deviation from a guideline must be specified in the site-specific National Environmental Policy Act (NEPA) decision document or the project’s record with the supporting rationale. When deviation from a guideline does not meet the original intent, a plan amendment is required.

Suitability of lands means that specific NFS lands within the plan area are identified as suitable for various multiple uses or activities, based on the desired conditions applicable to those lands. The plan will also identify certain lands within the plan area as not suitable for those uses that are not compatible with the desired conditions for those lands. The suitability of lands need not be identified for every use or activity. Every plan must identify NFS lands that are not suitable for timber production. In this plan, only lands that are and are not suitable for timber production have been determined. Although there is no suitability determination for other resources, the application of other plan components, in particular standards and guidelines, helps address where multiple uses or activities are appropriate in the plan area.

Forest Plan Coding

The forest plan uses a coding system to identify desired conditions, goals, objectives, standards, and guidelines and where they apply. It uses a pattern such as AA-BB-CCC. The series of letters before the first dash references the level of direction (for example, FW for forestwide, DA for designated area, MA for management area, and GA for geographic area). The middle series of letters references the resource area, such as SOIL for soil resources. Reference plan components are the third series of letters. For example, DC for desired condition, GL for goal, OB for objective, ST for standard, and GD for guideline. Then a unique number for the specific component follows, using the numerical order starting with 01 for each resource area and component type.

For example, forestwide direction for the first desired condition associated with wildlife would be identified as FW-WILDLIFE-DC-01. For designated areas, direction would be labeled by the abbreviation for the type of designated areas, followed by an abbreviation for the specific designated area name and then the component and numerical value abbreviation. For example, the first desired condition for Maple Canyon Geographic Area is identified as GA-MAPLE-DC-01.

Table 1. Plan component abbreviations.

Abbreviation	Resource Area Description	Abbreviation	Resource Area Description
AIR	Air Quality	MWS	Municipal Watershed Management Area
ALPINE	Alpine	NPM	Native Plant Materials
AQUATIC	Aquatic Ecosystems	NR	National Register Sites

BENM	Bears Ears National Monument	POLLINATOR	Pollinators
BYWAY	National Scenic Byway	RANGE	Range
CLIMATE	Climate Adaptation	REC	Recreation
CONIFER	Conifer	RWILD	Recommended Wilderness
CULTURAL	Cultural/Heritage	RISK	At-Risk Animal Species
DECIDUOUS	Deciduous	RISKPLANT	At-Risk Plant Species
EDUC	Education, Interpretation, and Volunteerism	RMZ	Riparian Management Zones
ELK	Elk Ridge Geographic Area	RNA	Research Natural Area
EWSR	Eligible Wild and Scenic River	SCENERY	Scenery
FACILITY	Facilities	SHRUB	Shrublands
FIRE	Fire	SPARSE	Sparse or Non-vegetated
FUELS	Fire Management and Fuels Mitigation Area	TIMBER	Timber
GBER	Great Basin Experimental Range	TRAIL	National Recreation Trails
GBS	Great Basin Station	TRANSITION	Transitional Ecosystems
GEOLOGY	Geology and Paleontology	TRANSPORT	Transportation
HERB	Herblands	TRIBAL	Areas of Tribal Importance
HORN	Horn Mountain and Wildcat Knolls Management Area	VEGETATION	Vegetation Resources
INVASIVE	Noxious Weeds and Invasive Plant Species	WATER	Watershed Health
IRA	Inventoried Roadless Areas	WATERSOURCE	Community Water Sources
LAND	Lands	WETLAND	Groundwater Dependent Ecosystems and Wetlands
LEWIS	Mont E. Lewis Botanical Area	WEEDS	Noxious Weeds and Invasive Plant Species
MAPLE	Maple Canyon Management Area	WILD	Wilderness
MINERALS	Minerals and Energy	WILDLIFE	Wildlife
MOAB	Moab Geographic Area	WOODLAND	Woodlands
PINHOOK	Pinhook Battlefield		

Other Required Plan Content

- Distinctive Roles and Contributions of the Manti-La Sal National Forest – see later in chapter 1.
 - Describes the Manti-La Sal National Forest’s distinctive contributions to the local area, region, and Nation, and the roles for which the forest is best suited, considering the agency’s mission and capabilities.
- Priority Watersheds – Chapter 2, under *Watershed and Aquatic Resources*, priority watersheds have been identified using the Forest Service National Watershed Condition Framework (WCF) as areas where plan objectives for restoration focus on maintaining or improving watershed condition. WCF classifications and priority watersheds may change over the life of the forest plan, reflecting changes in watershed conditions.
- Forest Plan Monitoring – Chapter 6 includes testing assumptions, tracking changes, and measuring management effectiveness and progress toward achieving or maintaining the plan’s desired conditions or objectives.

Optional Plan Content

Management approaches are not required by the 2012 Planning Rule. Management approaches are used to describe the principal strategies and program priorities that the responsible official intends to carry out through projects and activities developed under the plan. Management approaches can convey a sense of priority and focus among objectives and a forest's likely management emphasis, as well as potential partnerships. Management approaches should relate to desired conditions and may indicate the future course of direction change, recognizing budget or program trends, and accomplishments. All of the management approaches are located in Chapter 7.

A change to *other required plan content* or *optional content* does not require a plan amendment; instead, such changes may be made using an administrative correction process.

What the Forest Plan Does Not Cover

The forest plan sets broad direction and direction for management of forest resources but does not generally include site-specific direction regarding where future projects will occur or how many permits will be issued. A revised forest plan provides updated management direction for the plan area, but it does not commit the forest to any site-specific action, does not change boundaries set by legislation or rulemaking, and does not affect valid existing rights. Forest plans also do not affect any valid existing rights established by statute; therefore, this proposed forest plan does not include the following:

- **Direction about specific roads and trails.** Determinations about which roads and trails will be opened or closed to specific types of motorized and nonmotorized uses are not addressed at the forest plan level. However, the forest plan may provide context and guidance for future travel management decisions.
- **Authorization for oil and gas leases.** This forest plan does not evaluate or make determinations about the suitability or availability of lands for future mineral or oil and gas leasing. Such determinations, as well as needed or appropriate lease stipulations to be applied to future oil and gas leases, would be carried out in a separate leasing analysis.
- **Recommendation to Congress or designation of wilderness or wild and scenic rivers.** The formal designation of wilderness and wild and scenic rivers does not occur during plan revision because only Congress can perform these acts. The forest plan can, however, result in the preliminary administrative recommendation of areas for wilderness designation or a determination of rivers or river segments that are eligible or suitable for wild and scenic river designation. Such forest plan recommendations or determinations do not guarantee either recommendation to Congress or formal designation by Congress, but they do influence forest plan guidance regarding how to manage the recommended areas in the interim.
- **Changes to designated inventoried roadless areas.** The boundaries of inventoried roadless areas defined by the 2001 Roadless Area Conservation Rule cannot be changed at the national forest level. The Roadless Rule can only be modified through a national rulemaking process or congressional action.
- **Numbers and types of permits.** Determining the number of livestock permitted to graze or the types and numbers of other types of permits is managed at the site-specific, project level; however, the forest plan establishes desired conditions and other guidance with which permitted activities will need to be consistent.
- **Existing rights.** The National Forest Management Act does not authorize bypass flow or water right transfer requirements; rather, it directs the Forest Service to prepare management plans that provide for multiple uses and sustained yield of forest resources in accordance with the Multiple-Use Sustained-Yield Act of 1960. This act specifies that the national forests shall be managed for outdoor recreation, range, timber, watershed, and wildlife and fish purposes, and

includes no grant of authority for bypass flow requirements to the Forest Service. The National Forest Management Act does not include any other specific directives governing Forest Service management of water resources. The Forest Plan establishes desired conditions and other guidance for watershed management; however, it does not address administration of water rights.

Overview of the Forest

The 1.4 million-acre Manti-La Sal National Forest is in central and southeastern Utah and extreme western Colorado. The Forest lies within eight Utah counties: Carbon, Emery, Grand, Juab, San Juan, Sanpete, Sevier, and Utah, and two Colorado counties: Mesa and Montrose.

The Forest was set aside in three separate units: the Manti Forest Reserve created in 1903, the La Sal Mountains Forest Reserve created in 1906, and the Monticello Forest Reserve created in 1907. In 1908, the La Sal and Monticello Forests were combined and became known as the La Sal Forest. The Manti-La Sal National Forest was established in 1949 through the consolidation of the Manti and La Sal Forests.

The San Pitch Mountains, set aside in 1897 as part of the Uintah Forest Reserve – which was the predecessor to the Ashley, Uinta, and Wasatch-Cache National Forests – were assigned to the Manti-La Sal National Forest for administration in 1974.

The forest's geology and climate, past and present, shape the landscape. The San Pitch Mountains and Wasatch Plateau comprise the Ferron, Price, and Sanpete Districts of the Forest, while the La Sal and Abajo Mountains, and surrounding NFS lands, comprise the Moab and Monticello Districts. The climate varies from semiarid in the lower elevations to cool and semi-humid in the high elevations.

Distinctive Roles, Responsibilities, and Contributions

The description of the forest's distinctive roles and contribution within the broader landscape reflects those things that are truly unique and distinctive (United States of America, 2023)36 CFR 219.2(b)) about the plan area at the international, national, regional, and local scales. Understanding these roles and contributions will help illustrate realistic and achievable desired conditions for the forest and set a focus for the plan, when we look at where the Forest has been, where it is today, and future direction.

Distinctive roles, responsibilities, and contributions are discussed in the Forestwide resource direction below.

Internationally, the Manti-La Sal National Forest provides outstanding recreation and opportunities to see and learn from significant cultural landscapes. Nationally, the forest provides settings in which tribal communities maintain traditional practices. In addition, the Forest provides coal and other energy resources that make critical contributions to the total energy consumption in Utah and the western United States.

At the local level, the forest encompasses ten counties within Utah and Colorado and contributes to local communities through economic returns to the counties, employment, public utility sites, wildland fire protection, recreation and tourism opportunities, water resources, livestock grazing, and habitats important for native wildlife and plants. Counties also collect mineral lease royalties on their lands and receive allocated royalties indirectly from federal lands.

Need to Change the 1986 Plan

Over 36 years have passed since the Regional Forester approved the Manti-La Sal's 1986 forest plan. In that time, new scientific information and understanding, along with changes in socioeconomic and

ecological conditions, have resulted in a shift in management emphasis from outputs to outcomes. Revision of the plan is also necessary to comply with the National Forest Management Act and the 2012 Planning Rule.

Secondly, a revision of the 1986 plan is needed to address numerous emerging management changes, as well as ecological, social, and economic conditions and trends identified through monitoring and public, cooperating agency, and Tribal comments. Many of these were identified as themes and conditions in the Preliminary Need for Change document drafted in 2018 and published with the Notice of Intent in 2021. The major drivers of a need to change across most of the resources were identified as:

- Increasing population and associated increasing visitation across the Manti-La Sal NF and adjacent communities.
- Technological and scientific advances and changes, which have increased demand for more relevant management approaches and actions to capitalize on new efficiencies and be more effective across resources.
- Change towards more holistic and integrated management approaches across ecological, social, and cultural resources.
- Budget and capacity limitations.
- Management actions or inactions limiting natural disturbance regimes, including, but not limited to, insect and disease and fire suppression.
- An overall warming, drying trend associated with climate change and prolonged drought that is altering vegetation and watershed conditions and ecological processes.

The Preliminary Need for Change document, along with additional public involvement, were used to refine the identified themes and conditions as well as establish parameters for the development of the forest plan. Three focus areas were identified, each of which is represented and addressed in all alternatives. The three focus areas are:

Resilience and Adaptability

- There is a need for plan direction to 1) incorporate the changing climate, including adaptive responses to impacts of climate change; 2) focus on maintaining ecosystem resiliency to continue to provide multiple uses and ecosystem services; and 3) ensure flexibility exists within the plan to respond to changes in rangeland and forested land conditions.
- There is a need to recognize the interdependency of resources, especially to build resiliency: i.e., the ability of forest ecosystems to regain structure, composition, and function following disturbance in a timespan that is consistent with the dynamics of the ecosystem. This includes an integrated resource approach to recognize the natural role of fire and its use as a management tool for native vegetation communities – for instance, the restoration and maintenance of fire as an ecological process in fire-adapted ecosystems to provide for safe and effective wildland fire response for firefighters and the public, especially in areas with values at risk.

Ecological Systems

- There is a need to manage vegetation at the watershed scale to address ecological systems holistically, as well as to address the increasing social and economic risks posed to infrastructure and adjacent communities. This includes moving highly-departed vegetation types toward historic reference vegetation conditions that better reflect a more resilient and sustainable vegetation community composition and structure, while minimizing risks to ecosystem integrity. Additionally, this includes managing vegetation to restore natural disturbance cycles. By

managing vegetation at the watershed scale and holistically other resources, such as range, wildlife, watersheds, and recreation should also benefit and become more resilient and sustainable.

- There is a need for plan direction to maintain and restore upland and riparian vegetative cover and minimize or reduce erosion and sedimentation from disturbed sites and multiple-use impacts, while also protecting stream channels, hydrological function, and the condition of water-dependent systems. Additionally, there is a need to manage for sustainable groundwater-dependent ecosystems, such as seeps and springs, fens, and wetlands and to provide for the long-term protection of groundwater quality and quantity. There is also a need for plan direction to promote the maintenance and restoration of soil condition and function, including hydrology, stability, and nutrient cycling, by limiting the amount of exposed soil and by restoring and maintaining sufficient vegetative cover.
- There is a need for plan direction to balance consumptive water uses and water rights with availability because water is over-allocated and will continue to be in high demand.
- There is a need for restoration and maintenance of ecological conditions that contribute to the recovery and conservation of federally listed species (threatened and endangered), maintain healthy populations of the species of conservation concern, and maintain common and abundant species. In addition, plan direction is needed to provide security and connectivity for species migration and movement.
- There is a need for plan direction that emphasizes the restoration and conservation of native grass, forb, shrub species and ground cover in degraded and disturbed rangelands. In stable rangelands, continue maintenance and monitoring of vegetation in these altered ecosystems.

Tribal, Social, and Economic Needs

- There is a need to use a legal framework to manage cultural resources that stresses the importance of tribal consultation and protecting tribal rights, in addition to actively managing the impacts of increasing visitation and climate change on cultural sites and condition. In addition, there is a need to manage areas of tribal importance and contemporary cultural uses that align with the values, social and economic needs of federally recognized Nations, Tribes, and Pueblos, and rural historic communities.
- There is a need to incorporate traditional indigenous and ecological knowledge into management of the forest; this includes management of vegetation resources, springs and other watershed resources, wildlife habitat, scenery, and interpretation and education.
- There is a need for management approaches to recognize the role of the forest in supporting local economies through both commodity production and services such as recreation and tourism. There is a need to focus on partnerships with state and federal agencies, cities and counties, tribal governments and other rural historic communities, nongovernmental organizations, local communities, and youth. This focus is also needed to address new and changing fiscal realities on and off the forest and to respond to and align with other land management plans—both on the forest and on adjacent, heavily visited public lands.
- There is a need for plan direction regarding sustainable recreation management that meets the fiscal reality and limited internal capacity of the forest, while addressing increasing and changing demands. Additionally, there is a need for plan direction to adapt to address emerging technologies, shifts in recreation use patterns, desired recreation activities and desired types and availability of facilities. Finally, there is a need for plan direction to avoid unacceptable impacts to other resources and user conflicts.
- There is a need to prioritize a sustainable transportation system that addresses decreasing road and trail budgets, increasing demands for access and diverse types of access, and the negative impacts of transportation infrastructure on other resources.

- There is a need for plan direction to integrate scenery management that is responsive to the changing expectations of the public, increasing visitation, and increasing recreation demands into resource management decisions.
- There is a need to include provisions for the surface activities of claimants on locatable, hard rock and placer minerals; mineral material resources; and leasable minerals such as conventional oil, gas, and coalbed methane. Additionally, there is a need to address minerals and energy-related transmission corridors and potential future proposals for renewable energy generation such as wind, solar, and geothermal and the potential impacts of all these on other forest resources.

Overall, there is a need for plan direction that is strategic and identifies desired conditions with objectives for how resources should be managed; eliminates redundancies with existing laws, regulations, and policy; removes requirements to prepare additional resource plans; and incorporates the best available scientific information into all plan components.

CHAPTER 2. FORESTWIDE DIRECTION

Watershed and Aquatic Resources

See Also

Wildlife, At-Risk Animals, Soils, Vegetation Communities and Resources, Lands, Transportation, At-Risk Plants, Minerals and Energy Resources, Livestock Grazing and Range Management, Fire and Fuels Management, and Moab Geographic Area.

Description and Values

The Forest Service's emphasis on watershed management began with the Organic Administration Act of 1897, which defined the key purposes of NFS lands as protecting forest health, providing timber, and *securing favorable conditions of water flow*. Today, management of watersheds and aquatic resources includes not only maintaining water flow, but also sufficient water quality and quantity for downstream communities, as well as maintaining all the ecological components of a watershed—including surface and subsurface water sources, soil, vegetation, and wildlife. Protection of water resources is recognized as a vital part of managing national forests for ecological, economic, and social sustainability.

Many of the communities surrounding the forest rely, sometimes exclusively, on water from the many watersheds located partially or entirely on the Manti-La Sal NF. These watersheds are managed to meet or exceed federal, Utah, and Colorado water quality standards. The forest has 120 sixth level (HUC 12) watersheds located completely on the forest and an additional 60 that are located partially within the forest boundary. Of the 120 watersheds that are entirely on the forest, many are functioning properly and exhibiting high geomorphic, hydrologic, and biotic integrity relative to their natural potential condition. There are, however, some that are functioning-at-risk, as defined by the Watershed Condition Framework. In addition to providing drinking water for local communities, these watersheds also provide water for agricultural and industrial purposes. To support some of these purposes, as well as recreational opportunities, numerous dams and canal systems are under permit to private, state, and other federal agencies. In addition to permits with other agencies and private stakeholders, the forest coordinates with other entities to ensure ecological and hydrologic processes managed on the forest continue to provide critical water supplies to communities and water users.

The forest includes aquatic ecosystems that consist of approximately 680 miles of streams and 1,765 acres of lakes and reservoirs. Streams on the forest are headwater streams that carry water from the

upper reaches of the watershed downstream to beyond the forest boundary. Their ecological benefits include the maintenance of water quantity and quality, flood control, groundwater recharge, and habitat for plants and animals. Small streams, in their natural state, absorb a significant amount of rainwater and snowmelt, thus serving as flood controls. Some of this water recharges groundwater when water levels are high, such as during spring snowmelt. Streams also have economic value, such as providing water to the Huntington Power Plant. The forest provides an array of fishing opportunities, from high-elevation, snow-fed streams and lakes to high- and mid-elevation reservoirs where you can experience native fish such as cutthroat trout and desirable, non-native game fish such as rainbow trout, brown trout, brook trout, and kokanee salmon, among others. These fishing experiences constitute an important social and economic traditions to the forest, as well as the state of Utah.

Desired Conditions (FW-WATER-DC)

- 01** Anthropogenic disturbance features reflect inherent watershed stability.
- 02** Watersheds support water quality and quantity, for both surface water and groundwater, at levels that preserve the biological, physical, and chemical integrity of the ecosystem in which they occur.
- 03** Watersheds ensure the survival, growth, and reproduction of native and desirable introduced aquatic species and produce high-quality water for downstream communities dependent on them.
- 04** Watersheds are connected laterally, longitudinally, and vertically. Floodplains, wetlands, upslope areas, headwater tributaries, and intact habitat refugia are all connected and provide unobstructed physical passage and nutrient transport to sustain healthy populations of aquatic, riparian, and upland species of flora and fauna.
- 05** Streams are within their natural range of variation for equilibrium between water and sediment supply.
- 06** Stream flow regimes maintain natural channel and floodplain dimensions.
- 07** Surface and groundwater flows provide late-season stream flows, cold-water temperatures, and sustain the function of surface and subsurface aquatic ecosystems.
- 08** The sediment regime for water bodies with regards to the timing, volume, rate, and character of input, storage, and transport are within the natural range of variation.
- 09** Water quality, including groundwater, meets, exceeds, or is moving towards, state and federal standards and, where possible, fully supports designated and existing beneficial uses. Aquifers possessing groundwater, which provide designated beneficial uses, maintain water quality at natural or background levels.
- 10** Water bodies on the forest are resilient to human and natural disturbances and changing climatic conditions across the landscape.
- 11** Invasive aquatic species are not present and do not disrupt ecological function. Where invasive pathogens occur, their range is reduced or prevented from expansion.
- 12** To sustain a diversity of species, ecosystems, and uses, the timing, magnitude, duration, and spatial distribution of peak, high, and low flows in intermittent and perennial streams and springs are retained, except when precluded due to existing water rights.
- 13** Aquatic habitats support and sustain plant and wildlife species, including at-risk species and macroinvertebrates.

- 14 Aquatic species habitat within stream channels is characterized by riffles, runs, and pools that occur at frequencies and with dimensions reflective of the climate, geology, and natural vegetation of the area.
- 15 At least 60 percent of woody riparian cover consists of at least three native plant species or, where soil characteristics do not support woody vegetation, native obligate wetland species comprise at least 60 percent of the herbaceous bank cover.
- 16 In forested streams, large woody debris is larger than 12 inches in diameter and over 35 feet in length and comprise more than 30 pieces per mile. Large-diameter trees and snags near stream channels and riparian areas are present in quantities that provide for recruitment of large woody material to stream channels.
- 17 Lands that contribute to community water sources are in a condition that supports consistent delivery of clean water, meets the supply needs of users, and meets or exceeds state of Utah and Colorado water quality standards.

Objectives (FW-WATER-OB)

- 01 Over the life of the plan, trend at least 5 functioning-at-risk watersheds toward proper functioning, based on the Watershed Condition Framework and Watershed Condition Classes.
- 02 If a site-specific project occurs in areas where impacts to groundwater or surface water quantity and quality is likely, collect baseline natural range of variation data within 1 year of the project decision.

Standards (FW-WATER-ST)

- 01 All management activities in and around waterbodies shall use decontamination procedures to prevent the spread of undesirable fungus, disease, and nonnative and/or invasive biota.
- 02 Chemical retardant, foam, or other fire chemicals and petroleum shall not be applied aerially in mapped aerial retardant avoidance areas, to protect water systems and aquatic resources.
- 03 Aquatic invasive species shall be controlled or eradicated, when possible.
- 04 Placement of salt or other edible attractants to livestock and wildlife within a quarter of a mile of any water source shall not be authorized to be placed.

Guidelines (FW-WATER-GD)

- 01 To maintain healthy aquatic habitats, management activities should not fragment aquatic habitats or aquatic organism passages or adversely impact hydrologic connectivity.
- 02 To maintain spring function, new or reconstructed water developments or impoundments should retain water at the source and allow some natural overland flow. They should be designed to prevent animal entrapment and to facilitate animal escape.
- 03 To avoid or minimize impacts to wetlands and other aquatic systems, mitigation measures should be established prior to management activities.
- 04 To protect and meet the needs of water users; support instream flows subject to existing water rights; protect ecological, stream, and wetland functions; and meet applicable water quality standards, permitted water diversion structures should be maintained.

- 05 To maintain or enhance public water supply, management actions should avoid long-term degradation to community water resources. Short-term effects from management actions may be acceptable when those activities support long-term benefits to water quality.
- 06 To restore ecological function and natural scenic compositions, the efficacy, timeliness, and expected duration of use for debris basins and other post-wildland fire flood mitigation structures should be reviewed before their construction and installation.
- 07 To rehabilitate and restore head cuts, incision points, and gullies, grade stabilization structures should be used in watershed restoration actions and projects.
- 08 To maintain watershed health and characteristics, applications for special-use permits associated with the development of an issued water right should not be granted, unless specifically for purposes of enhancing or improving characteristics that provide for water quality or quantity.
- 09 To ensure spring restoration projects respect tribal values and incorporate indigenous and ecological knowledge, Nations, Tribes, and Pueblos should be consulted early in the planning process.

Goals (FW-WATER-GL)

- 01 Work with private, state, and other federal agencies to maintain or improve the health of watersheds on the forest.
- 02 Obtain and maintain water rights and assist with adjudication on federal lands in compliance with state and federal water laws to establish and maintain stream flow protection for the purpose of supporting ecological integrity, specifically, healthy aquatic life and habitat and proper stream and wetland function; meet applicable water quality standards; and support water-dependent recreational activities.
- 03 Work with partners and cooperators to manage aquatic ecosystems by sustainably maintaining or increasing water quality, quantity and timing of flows, supporting aquatic life and habitat, and the geomorphic processes associated with these features.
- 04 Coordinate with the Utah and Colorado DEQ and other partners to assist in monitoring macroinvertebrates to achieve water quality monitoring requirements.
- 05 Work with local communities whose watersheds originate or occur within the plan area to identify opportunities to coordinate implementation of watershed health monitoring and improvement projects.
- 06 Coordinate management of forest watersheds with the state of Utah and the appropriate municipalities or communities.

Riparian Management Zones

See Also

Watershed and Aquatic Resources, Timber Management, Vegetation Communities and Resources, Fire and Fuels Management, Livestock Grazing and Range Management, and Recreation and Access.

Description and Values

Riparian areas are the richest habitat type in terms of species diversity and wildlife abundance in Utah. Riparian ecosystems occur along watercourses or water bodies in a variety of landscapes and are often

characterized by unique and diverse vegetation communities. They provide many supporting and regulatory services across the landscape, such as floodwater retention and dispersal, sediment and chemical filtering, stream temperature and climate regulation, input of organic material including large wood and litter, nutrient cycling, and soil and streambank stabilization. Riparian vegetation is valued as critical wildlife habitat; therefore, the distribution of riparian ecosystems is important to watershed function and habitat connectivity on the forest.

Resources directly associated with these habitats include aquatic macroinvertebrates, fish, amphibians, and a variety of terrestrial species. Grazing by livestock or big game, roads, recreation, invasive plant species, water developments, and drought can adversely affect these resources if unmanaged or unmaintained.

Desired Conditions (FW-RMZ-DC)

- 01** Upland watershed, soil, and vegetation conditions contribute to healthy, resilient riparian areas, wetlands, and stream channels.
- 02** Riparian ecosystems and their associated plant community compositions provide supporting functions, such as streambank stability, sediment retention, temperature regulation, floodplain function, as well as proper groundwater recharge, storage, delivery, and water table maintenance.
- 03** Riparian ecosystems are resilient and adaptable to withstand disturbance from natural impacts and management activities, including flood, fire, drought, changes in climate, changes in timing and frequency of runoff, recreation, grazing, timber harvest, and in-stream developments.
- 04** Riparian areas meet the needs of native and desirable non-native aquatic species, terrestrial species, and migratory birds.
- 05** Riparian areas sustain plant communities that are stable, healthy, vigorous, and self-perpetuating with a diverse composition of desired native species that includes rhizomatous and woody plants.
- 06** Invasive plant species are absent within riparian management zones.
- 07** Density and structure of riparian vegetation provides site-appropriate shade to regulate temperature in streams.
- 08** Riparian areas are dominated by rocks and logs or deep-rooted hydric species that anchor the soil and limit excessive erosion.
- 09** Moving water streams and springs are in proper functioning condition with vegetation, landforms, and coarse woody debris present to dissipate stream energy associated with high water flows including, but not limited to, five-to-twenty-five-year events.
- 10** Riparian management zones capture, store, and release water, sediment, coarse wood, and nutrients, and function as habitats that support diverse populations of native aquatic species.

Objectives (FW-RMZ-OB)

- 01** Over the life of the plan, restore at least 300 acres of riparian areas or associated wetlands that are currently below proper functioning level.
- 02** Every 5 years, for the life of the plan, to benefit aquatic habitat for at-risk plant and at-risk animal species, complete a minimum of 25 acres of aquatic habitat restoration on areas that are currently below proper functioning level.

- 03** Every 5 years, over the life of the plan, improve or restore a minimum of 25 stream-miles of aquatic species habitat that is currently below proper functioning level.

Standards (FW-RMZ-ST)

- 01** Pesticides and other toxic chemicals shall only be applied in riparian management zones to maintain, protect, or enhance aquatic and riparian resource values or to restore native riparian and aquatic species. Any exceptions require consultation with Forest Service watershed or fisheries personnel; and use shall be consistent with label instructions and forest pesticide use plans.
- 02** Refueling activity, equipment maintenance, and storage of fuels and other toxic chemicals shall be located outside of riparian management zones to minimize effects on aquatic resources. If refueling, equipment maintenance, or storage sites are proposed within riparian management zones, the locations shall be approved by the Forest Service and have an approved spill containment plan that includes appropriate containment provisions.
- 03** To protect terrestrial and aquatic resources, new sand or gravel extraction sites shall not be located within riparian management zones, except small use areas for trail work.

Guidelines (FW-RMZ-GD)

- 01** To protect aquatic habitat and ecological processes associated with waterways, the slope distance widths of riparian management zones should be as defined in Table 2. These widths may vary based on site-specific ecological or geomorphic factors or type of water body and apply unless replaced by a site-specific delineation of the riparian area. Buffers could change based on the results of monitoring.

Table 2. Slope distance, in feet, of riparian management zone widths by type of waterway.

Waterway Type	Slope distance in feet
Perennial streams, natural ponds, lakes, wetlands, seeps, springs, and reservoirs	150 ^a
Intermittent seasonally flowing channels and waterbodies supporting riparian vegetation	100 ^a
Ephemeral stream channels and waterbodies, unstable or potentially unstable areas	50

^a Or the outer edge of riparian vegetation, whichever is greater.

- 02** To ensure the protection of water resources, geomorphic features, and vegetation characteristics, management actions in riparian management zones should include applicable National Core best management practices and site-specific mitigation measures.
- 03** Mechanical vegetation management, including but not limited to, fuels reduction and wildlife habitat enhancement, should not occur unless to maintain or enhance the riparian management zone.
- 04** To manage for healthy waterways, management activities, including but not limited to livestock grazing, motorized use, and dispersed camping, should only occur when adequate streambank vegetation and canopy cover can be retained as described by the best available science.
- 05** To improve channel morphology, downed woody material in stream channels should be retained, except where safety is a concern.

- 06 New, replacement, and reconstructed crossing sites of fish-bearing streams, including but not limited to culverts and bridges, should allow for aquatic organism passage, unless a barrier is desired for native aquatic species management.
- 07 Beaver-relocation efforts should only occur after proper site evaluation and using available information, such as the Beaver Restoration Assessment Model (BRAT).

Goals (FW-RMZ-GL)

- 01 Prioritize and restore riparian management zones with federal, state, and local cooperators.
- 02 Work with the states of Utah and Colorado on the establishment and relocation of species, such as beavers, who are dependent on riparian management zones.

Groundwater-Dependent Ecosystems and Wetlands

See Also

At-Risk Animals, At-Risk Plants, Minerals and Energy Resources, Vegetation Communities and Resources, Fire and Fuels Management, Livestock Grazing and Range Management, Wildlife, Recreation and Access, and Soil Resources.

Description and Values

Groundwater-dependent ecosystems are communities of plants, animals, and microorganisms that rely on the availability of groundwater to maintain their structure and function. Wet meadows, fens, springs, and seeps are all examples of groundwater-dependent ecosystems occurring on the Forest.

A wetland is an ecosystem that depends on constant or recurrent shallow inundation or saturation at or near the surface of the substrate. Wetlands are landscape features that are often wet but not necessarily wet year-round. Wetlands are unique because of their hydrologic conditions and their role as ecotones between terrestrial and aquatic systems. Three common diagnostic features of wetlands are hydric soils, hydrophytic vegetation, and the presence of water either permanently or seasonally. Types of wetlands that on the forest include nontidal marshes, wet meadows, and fens.

Fens are a type of wetland in which the water table is at or near the ground surface for most of the growing season during most years, which results in a substrate that is poorly aerated with inundation lasting long enough to encourage plants that exist in wet and often reducing conditions. The long duration of anaerobic conditions limits the decomposition of plant material and, over time, organic matter may accumulate to form peat soil.

On the Manti-La Sal National Forest, wetlands occur primarily in glaciated terrain and are frequently associated with glacial moraines, slide areas, and faults. The highest density of wetlands occurs within the fault valleys of the central Wasatch Plateau, followed by the southern Wasatch Plateau. Wetlands also frequently occur on the glacial moraines and slide areas of the La Sal Mountains and in the landslide terrain of the Abajo Mountains.

Desired Conditions (FW-WETLAND-DC)

- 01 Wetlands support unique plant and animal species that are characteristic of historical conditions and are not fragmented by new infrastructure and development.
- 02 Where possible, groundwater-dependent ecosystems with perennial streams contain a diversity of age classes of hardwood shrubs along the stream bank.

- 03 Groundcover species composition in wetlands represents healthy condition class, species richness, and diversity.
- 04 Groundwater-dependent ecosystems continue to provide important ecological functions. They persist in size and exhibit water table elevations within their natural range of variation.
- 05 Groundwater-dependent ecosystems and wetlands maintain the necessary soil, hydrologic, and vegetative conditions to provide for the storage, purification, and release of water and the storage of carbon and they serve as suitable habitat for rare or uncommon, terrestrial, and aquatic species.
- 06 Seeps and springs are healthy and functioning across the forest. This includes supporting the water flow, recharge rates, and geochemistry necessary to maintain essential ecological functions.
- 07 Groundwater-dependent ecosystems and groundwater aquifers persist in size, seasonal and annual timing, and water table elevation within seasonal variability to maintain vegetation and wildlife biodiversity commensurate with historic levels.
- 08 Fens have the necessary soil, hydrologic, water chemistry, and vegetation conditions to provide for continued fen development and resilience to changes in climate and other stressors.

Objectives (FW-WETLAND-OB)

- 01 Restore native vegetation and natural water flow patterns on at least 5 acres of wetlands every 5 years.
- 02 Field-validate the Forest Fen report within 10 years of plan decision.
- 03 Restore or improve groundwater-dependent ecosystem hydrologic and ecological function on a minimum of one acre every 5 years to provide ecological conditions suitable for at-risk plant and at-risk animal species.
- 04 Inventory and identify necessary restoration activities for a minimum of 30 springs, wetlands, and riparian site within five years of plan decision.

Standards (FW-WETLAND-ST)

- 01 New road and trail development shall not be authorized in groundwater-dependent ecosystems and wetlands.

Guidelines (FW-WETLAND-GD)

- 01 To avoid impacts to groundwater-dependent ecosystem and wetlands, existing roads and trails should be rerouted or closed, if the impacts cannot be mitigated unless closure or rerouting would further impact the groundwater-dependent ecosystem and wetlands.
- 02 Ground-disturbing activities should only occur in fens to restore or enhance aquatic and riparian resource conditions.
- 03 To avoid or minimize impacts, establish mitigation measures prior to management activities in groundwater-dependent ecosystems, to avoid or minimize impacts.

Goals (FW-WETLAND-GL)

- 01 Conduct spring restoration projects in partnership with interested individuals, groups, and agencies, including Nations, Tribes, and Pueblos.

Air Quality

See Also

Fire and Fuels Management.

Description and Values

Two primary types of air quality effects concern the forest: first, the effects of regional air pollution on forest natural resources and the human health of surrounding communities and second, the effects of forest emissions on forest natural resources, human health, and regional airsheds.

Air pollution affects the natural quality of forest lands and surface waters. It is often of concern in wilderness areas, where maintaining wilderness character is mandated by the Wilderness Act. For instance, high ozone concentrations can injure sensitive vegetation. Fossil fuel burning emits sulfur dioxide and nitrogen oxides into the atmosphere. Certain types of agricultural activities emit ammonia into the atmosphere. Such emissions can lead to atmospheric deposition of sulfuric acids, nitric acids, and ammonium to Forest ecosystems. Atmospheric deposition can cause lake body acidification, eutrophication, and hypoxia; soil nutrient changes; and vegetation impacts. Deposition of toxic metals, such as mercury and lead, can be harmful to both aquatic and terrestrial ecosystems. Visibility in the forest can be obscured by the anthropogenic haze of fine pollutant particles during certain times of the year. In addition, the Clean Air Act requires Forest Service operations and permitted operations, such as prescribed burning, fossil fuels development and production, and mining, to comply with the following: National Ambient Air Quality Standards for listed criteria pollutants, such as ozone and particulate matter; National Emission Standards for hazardous air pollutants; and protection of Air Quality Relative Values in nearby Class 1 wildernesses and national parks.

Desired Conditions (FW-AIR-DC)

- 01 The forest meets applicable federal, state, and tribal air quality standards, including ambient air quality. The forest works with these partners to accomplish this, when appropriate.
- 02 Forest resources are protected from the harmful impacts of air pollutants, such as ozone injury, excess fertilization and acidification from air pollutant deposition, and visibility reduction.
- 03 Good air quality supports human and ecosystem health and long-term quality of life. It enhances the visibility and the aesthetics of the plan area over the long-term.
- 04 Smoke emissions from wildland fires on the Manti-La Sal National Forest resemble the pattern, degree, and frequency of natural fire regimes.

Guidelines (FW-AIR-GD)

- 01 To protect human health and meet state regional haze goals, management activities should avoid adverse impacts to identified Air Quality Relative Values at nearby Class I areas.
- 02 Where there is a potential for dust to diminish air quality, dust abatement should occur during construction and road projects.

Goal (FW-AIR-GL)

- 01 To avoid smoke impacts on public health and safety, coordinate with local and regional partners to reduce cumulative air quality impacts prior to planned ignition activities.
- 02 Coordinate with the states of Utah and Colorado on improving air quality conditions in designated nonattainment areas.

- 03 Continue monitoring air quality through lichen collection and testing with federal agency and university partners.

Soil Resources

See Also

Watershed and Aquatic Resources, Timber Management, Minerals and Energy Resources, Vegetation Communities and Resources, Fire and Fuels Management, and Livestock Grazing and Range Management.

Description and Values

Soils are unconsolidated mineral and organic materials that support plants, making them the basis of terrestrial ecosystems. Soils contain nutrients, minerals, carbon, air, and water and are habitat for many organisms, including bacteria, fungi, algae, and multicellular plants and animals.

Soils help determine what plant communities can be supported and are important for maintaining healthy watersheds. Soils store, purify, and transmit water, as well as store and cycle both nutrients and carbon. Interactions between plants and soil are continual. Soils of high quality can support productive plant communities. Likewise, productive plant communities sustain soils by providing cover, root support, plant litter, coarse and woody materials, and organic matter. Soil erosion is driven by inherent conditions and naturally-occurring events. Healthy soils support effective ground cover, which in turn prevents or minimizes sheet, rill, and gully erosion. Physical, biological, and chemical properties of soils support nutrient cycling, maintain the role of carbon storage, and support soil microbial and biochemical processes.

Desired Conditions (FW-SOIL-DC)

- 01 Soil quality, condition, and productivity are stable or improving, allowing soil resources to maintain key ecological functions.
- 02 Sensitive and highly erodible soils and land types with mass failure potential remain stable.
- 03 Relatively undisturbed biological soil crusts (i.e., soil consisting of cyanobacteria, lichens, mosses, and algae organisms) are recorded, managed for persistence, and present where the potential exists. Accelerated soil erosion is minimal, short-term, or the result of the erosive properties of the parent material.

Guidelines (FW-SOIL-GD)

- 01 To maintain soil quality and stability, ground-disturbing management activities on landslide-prone areas should be avoided unless site-specific analysis indicates an ability to maintain soil and slope stability.
- 02 To reduce adverse burn severity to soils and associated mycorrhizae, soil moisture levels prior to and during planned ignitions should be adequate as indicated by the best available science.
- 03 To protect soil function, construction of linear features, including but not limited to trails and roads, should only occur where displacement and compaction can be avoided.
- 04 To protect source populations for biological soil crusts, impacts from ground disturbing projects should be identified and mitigated, to the extent practical.

- 05 To ensure sufficient organic materials necessary to maintain nutrient cycling and soil biology, ground cover and coarse woody debris should be retained at appropriate levels based on the site-specific vegetation community, slope, and soil textures.
- 06 To ensure long-term soil productivity, soil function should be restored on temporary roads and decommissioned road prisms used as temporary roads once management activities that use these roads are completed. Restoration management actions should be based on site characteristics and methods that have been demonstrated to measurably improve soil productivity.

Geologic and Paleontological Resources

Description and Values

The Manti-La Sal National Forest is home to diverse geologic resources including dramatic canyons, plateaus, and cliffs, as well as paleontological resources from dinosaur tracks and bones to mammoths. The forest's rich geologic history and diversity attract scientists and researchers, as well as recreationists. While many visitors come specifically seeking paleontological resources, many others are drawn to the forest's vegetative, wildlife and cultural resources—all of which are built on the geologic foundation, which underlies them all. For example, the sandstone and sedimentary cliffs and canyons provided a foundation for human habitation and agriculture, as well as wildlife. Likewise, the unique alpine talus and scree, as well as limestone and geomorphologic processes, have produced seeps and springs that serve as habitat for at-risk plant and at-risk animal species. The beauty of the igneous mountain range of the La Sal Mountains rising as above the surrounding flat-topped mesas and the vistas along the Skyline Trail across and into surrounding valleys are valued as recreational experiences and opportunities; these are all the result of the faulting, folding, and geomorphologic activity in the area. The coal seams and deposits, as well as other minerals have served as the backbone of many local economies, all influencing how people experience and interact with the forest. Without these geologic underpinnings, other resources – ecological, social, and cultural – would not have developed as they did.

Sedimentary rocks dominate the forest, but inclusions of igneous intrusions are present as well. The Ferron, Price, and Sanpete Districts' geology is primarily related to two plateaus, the Wasatch and Gunnison. In contrast, the Moab and Monticello Districts' geology is primarily related to four distinct geographical features: high mountain areas, pediment slopes, mesas, and canyons.

The Ferron, Price and Sanpete Districts have the highest concentration of landslides on the forest, including some of the largest naturally-occurring landslides in the United States. Landslides on the Wasatch Plateau are typically triggered under conditions of high precipitation or percolation rates associated with record snowpack and rapid melting, soil saturation which decreases effective porosity, and rapid spring runoff. When these factors occur simultaneously, the potential for large landslides rises, thereby increasing the risk to people, roads, and other facilities on the forest.

Fossils are found in nearly all the sedimentary rock formations exposed on the forest, including the unconsolidated Quaternary deposits, as evidenced by the discovery of mastodon bones in the sediments of an ancient natural pond. The Manti-La Sal National Forest has contributed to important paleontological discoveries, including dinosaur, and Pleistocene epoch, last ice age, mammal assemblages. Most noteworthy is the Huntington mammoth, which lived about 10,500 years ago; it is one of the most complete specimens ever found in North America and among the world's most replicated mammoth skeletons.

Desired Conditions (FW-GEOLOGY-DC)

- 01 The forest is available for geologic research and geologic resources are available for study.

- 02 Paleontological resources are inventoried, preserved, monitored, interpreted, and researched proactively and collaboratively with federal and non-federal partners, including Nations, Tribes, and Pueblos; the scientific community; and the public.
- 03 Geologic hazards, such as landslides, floods, and sinkholes, and the associated risks to public health and safety, facilities, and infrastructure are identified, mapped, and mitigated.

Objectives (FW-GEOLOGY-OB)

- 01 Work with partners to update the Forest Landslide Risk Model annually.

Standards (FW-GEOLOGY-ST)

- 01 When ground-disturbing activities associated with mineral prospecting and mineral development are proposed in locations with known paleontological resources, adhere to paleontological resource management regulations and objectives.
- 02 Identified geologic hazards that pose a threat to public safety shall be mitigated within three years of identification.

Guidelines (FW-GEOLOGY-GD)

- 01 To protect potential resource damage, information about and locations of paleontological resources and fossil sites should not be publicly disclosed or promoted, advertised as available for public use, or shown on maps, signs, or brochures unless measures are developed to manage recreational use and adequately protect the associated resources.
- 02 To ensure user safety, infrastructure, including facilities and roads, should only be developed in areas of high potential geologic hazards or landslide prone areas if measures to mitigate the safety risks are included in engineering design of the infrastructure.

Goals (FW-GEOLOGY-GL)

- 01 Work with qualified scientists and researchers to study, collect, and curate scientifically important paleontological resources.

Climate Adaptation and Carbon Sequestration

Description and Values

Changes in precipitation and temperature regimes and their increasing variability in the Intermountain Region are causing shifts across the landscape. For instance, greenhouse gases, temperatures, and community water needs are all projected to continue on an upward trajectory (USDA 2016f). And with warming temperatures, more precipitation is expected to fall as rain rather than snow, changing the amount and timing of water availability. The specific implications of changes in the amount and timing of precipitation on the structure and function of ecosystems is not precisely understood, but it may be necessary to adjust the prioritization of management actions to respond effectively to changes as revealed by monitoring. Additionally, to effectively respond to resources and landscape vulnerabilities, management actions will need to consider monitoring data and adaptation. Therefore, while many components in other resource areas complement current management strategies for climate adaptation responses, future adjustments may be necessary.

In the General Technical Report “Climate change vulnerability and adaptation in the Intermountain Region” (Halfosky et al., 2018a, 2018b), the Intermountain Adaptation Partnership identified climate change issues relevant to resource management on federal lands in Nevada, Utah, southern Idaho,

eastern California, and western Wyoming. This vulnerability assessment includes management options intended to help minimize the effects of climate change through adaptation strategies and approaches in key resource areas. This assessment also provides important information that may help the Manti-La Sal National Forest adapt to climate change where desired to improve resource management outcomes on the forest.

Desired Conditions (FW-CLIMATE-DC)

- 01 Carbon storage and sequestration potential is sustained by biologically-diverse and resilient forests, woodlands, shrublands, and grasslands that are adapted to natural disturbance processes and climate change.

Goals (FW-CLIMATE-GL)

- 01 The Manti-La Sal NF engages in cooperation and collaboration with tribal governments, universities, Forest Service research stations, non-governmental organizations, and other interested partners in the development and implementation of research, management practices, and monitoring programs to better understand and address the effects of climate change on ecosystems and ecosystem services to inform adaptation and mitigation strategies.

Vegetation Communities and Resources

See Also

Wildlife, At-Risk Animals, At-Risk Plants, Fire and Fuels Management, Livestock Grazing and Range Management, Recreation and Access, and Soil Resources.

Description and Values

Vegetation resources on the Manti-La Sal NF include forested and non-forested ecosystems and habitats and their associated vegetation community types. These vegetation communities support a variety of ecosystem services, from air-filtering to scenery to a viable livestock industry. Ecological conditions supporting habitat quality, habitat distribution, and habitat abundance contribute to self-sustaining populations of plants and animals – including at-risk species – that are healthy, well-distributed, genetically-diverse, and connected, enabling species to adapt to changing environmental and climatic conditions.

The forest contains a diversity of important habitats for many fish, plant, and animal species; among these are at-risk species, which include federally-listed species and species of conservation concern. There is a need to establish plan direction focused on achieving sustainability and resiliency within the vegetation communities that support these species. Minimizing risks to vegetation composition, function, and structure, as well as restoring natural disturbance cycles – including those associated with fire, insects, and disease – should benefit not only the vegetation communities, but also the species dependent on them. Additionally, there is a need to incorporate plan components that address multiple species, are habitat-based, and allow for flexibility due to changing conditions. The 2012 Planning Rule also requires the Manti-La Sal National Forest to support landscape-level connectivity beyond its boundaries to maintain plant and animal populations, while at the same time managing for multiple uses.

Desired Conditions (FW-VEGETATION-DC)

- 01 The composition, structure, and function of vegetative conditions are resilient to the frequency, extent, and severity of disturbances, as well as to climate variability.
- 02 Vegetation is a mosaic across the landscape because of natural processes and disturbances.

- 03 Desired habitat conditions across the forest and within each potential vegetation type contribute to the long-term persistence and diversity of native plant and animal species, including at-risk species.
- 04 Ground cover – including basal vegetation, litter, moss, lichen, and rock – is maintained at levels that contribute to suitable hydrologic function, soil stability, and biotic integrity, while providing habitat, food, and cover for wildlife species, including at-risk species.
- 05 Vegetative conditions are managed to support the growth of medicinal plants and other plant resources that are culturally significant to Nations, Tribes, and Pueblos.
- 06 Healthy, resilient forests and rangelands contribute to the ecosystem’s ability to store carbon and to continue to function as a sustainable carbon sink.
- 07 Diverse forest cover types with a strong representation of early seral tree species dominate the landscape.
- 08 Invasive, nonnative plant species are not present on the forest or do not disrupt ecological function.

Guidelines (FW-VEGETATION-GD)

- 01 To support nation, tribe, and pueblo traditional uses and sacred practices, management actions should seek opportunities to preserve and enhance culturally-valuable species.
- 02 To identify culturally-important plants and to connect tribal communities with the forest, seek opportunities to conduct ethnobotanical studies on the forest in partnership with Nations, Tribes, and Pueblos.
- 03 Allow the sustainable collection of medicinal plants and other forest products of cultural value to be harvested by permit, including by members of Nations, Tribes, and Pueblos.

Goals (FW-VEGETATION-GL)

- 01 Work with partners such as the Utah Watershed Restoration Initiative to accomplish vegetation projects that address habitat and fuels management.

Coniferous Forest

See Also

Timber Management, Fire and Fuels Management, Livestock Grazing and Range Management, Wildlife, Recreation and Access, and Soil Resources.

Description and Values

On the Manti-La Sal NF, coniferous forest communities – dominated by species that retain their foliage all year long – are primarily composed of three groups of tree species: spruce and fir, mixed conifer, and ponderosa pine. Coniferous vegetation communities provide both ecological as well as economic benefits to the forest and adjacent communities.

Ecologically, coniferous vegetation provides important habitat for many wildlife species, including at-risk species – i.e., federally-threatened, and endangered species and species of conservation concern. The diversity of vegetation composition, structure, and multi-layered canopy is important for the many wildlife species that depend on this coniferous forest, particularly late seral-dependent species.

Coniferous vegetation communities also provide commercial and non-commercial materials that support local industry and personal or subsistence uses. Most of the timber production on the forest occurs within the coniferous vegetation communities.

During the late 1990s, the Wasatch Plateau suffered a widespread spruce beetle epidemic, which killed much of the spruce. By 2010, most of the active damage from the epidemic had occurred; however, due to the significant reduction in spruce seed sources resulting from the beetle kill, the historically more-diverse coniferous communities on the forest may be dominated by subalpine fir for many decades to come. Additionally, more than half of the mixed conifer acres are overly dense with high fuel loads, which can negatively affect the health of the stands in terms of susceptibility to wildland fire and epidemics of both western spruce budworm and Douglas fir beetle. Similarly, ponderosa pine stands in the southeastern part of the forest naturally have a frequent fire regime; however, this has been negatively affected by fire suppression, timber management, and grazing.

Desired Conditions (FW-CONIFER-DC)

- 01** A diversity of native tree species, generally within the natural range of variability, is present. A full range of seral stages maintains ecosystem resilience, allowing coniferous vegetation communities to recover and adjust to disturbances without long-term, adverse effects to ecological integrity. The desired stand compositions are described in Table 3.

Table 3. Desired dominance in the composition of coniferous forest vegetation communities by type.

Vegetation Community	Dominant Species	Percent Presence
Ponderosa pine	Ponderosa pine	75
Mixed conifer	Douglas fir and white fir	75
Spruce and fir	Engelmann spruce	50

- 02** Insect and disease populations are steady and tree mortality is low, about 10-50 trees at the stand level.
- 03** Stand densities do not reach mortality limits and remain below 60 percent of maximum Stand Density Index.
- 04** Old growth, when possible, is present in the form of tree groups or single trees in uneven-aged patches or as small, even-aged patches. Old growth features include old trees, snags, large logs, and structural variability. Old growth stands are well-distributed throughout the landscape and provide adequate habitat for dependent wildlife.
- 05** Forty percent of forested landscapes are dominated by large and well-distributed trees. Large trees are defined relative to the average for the cover type and site potential.
- 06** A balance of forest structural stages, based on regional office-defined properly functioning condition of age and size classes, are present across the landscape.
- 07** Ponderosa pine stands retain age and diameter classes that mimic the historical range of variability created by naturally-occurring, frequent, low-severity fires. Structural stages reflect uneven-aged management, with older trees typically being retained to create open, park-like stands.
- 08** Ponderosa pine vegetation communities are characterized by a continuous presence of snags, large logs, and downed woody debris, especially snags that are 18 inches in diameter and in various stages of decay throughout the landscape.

Objectives (FW-CONIFER-OB)

- 01 To maintain or move towards achieving desired conditions, treat a minimum of 5,000 acres of ponderosa pine, 7,125 spruce-fir, and 7,875 acres of mixed conifer vegetation every 5 years. Treatment types may include mechanical timber harvest, planned ignitions, thinning, planting.

Guidelines (FW-CONIFER-GD)

- 01 To maintain nutrient cycling, soil biology, and habitat structure, coarse woody debris – including downed logs – should range from 3 to 10 tons per acre. Post-action tonnage per acre may be lower than recommended levels in areas where low fire behavior is desired, such as wildland urban interfaces and locations with high values at risk.
- 02 To ensure that long-term wildlife habitat and ecosystem processes are sustained, snags at least 30 feet tall and 18 inches in diameter should be retained at a minimum of 2 snags per acre in ponderosa pine stands and a minimum of 3 snags per acre in other conifer stands, unless this quantity was not present before management action. If the pre-action level was lower than this, the post-action level should equal the pre-action level.
- 03 To ensure that long-term wildlife habitat and ecosystem processes are sustained, downed logs at least 8 feet long with a midpoint diameter of 12 inches should be retained at a minimum of 3 logs per acre in ponderosa pine stands and a minimum of 5 logs per acres in other conifer stands, unless this quantity was not present before management action. If the pre-action level was lower than this, the post-action level should equal the pre-action level.
- 04 To maintain or restore proper functioning condition, planned vegetation management in mature or old structural groups in a landscape that is at or below the desired percentage of mature and old structural stages should be designed to maintain or enhance the characteristics of these structural stages.
- 05 To maintain or promote stands and groups of trees with interlocking crowns, vegetation management should be designed to maintain or promote proper functioning condition in mature and old forest structures.

Deciduous Forest

See Also

Timber Management, Fire and Fuels Management, Livestock Grazing and Range Management, Wildlife, Recreation and Access, and Soil Resources.

Description and Values

The forest provides regionally-important habitat for quaking aspen (*Populus tremuloides*), one of the few hardwood trees that thrive in the arid West. Aspen forests are widely distributed across the Manti-La Sal National Forest. They currently constitute about 17 percent of the forest; of which about 6 percent are intermixed with conifer stands. Eighty percent of seral and stable quaking aspen stands are currently classified as mature or old growth, with an age range of 80 to 150 years.

Aspen is the only deciduous tree community present on the Manti-La Sal NF. Aspen forests support a more diverse array of plant and animal species than any other upland forest type in the West. Stable aspen clones, ranging in age from 60 to 150 years, are valued for their beauty, habitat diversity, importance to wildlife, and hydrologic benefits. However, conifer encroachment, disease, fire suppression, improper grazing, and drought are negatively affecting aspen stands throughout central

and southern Utah. These trends, along with aspen die-back associated with a changing climate, may continue to affect this important forest type.

Desired Conditions (FW-DECIDUOUS-DC)

- 01 Aspen successfully regenerate and are broadly resilient to disturbances of varying frequency, extent, and severity.
- 02 In aspen forests, aspen dominate the overstory in all stages of succession; regeneration and recruitment are generally continuous or pulsed but may also be episodic.
- 03 In aspen forests, conifers are either absent or, if present, their numbers are consistently low so that they have only minimal impacts on aspen and associated understory species.
- 04 Aspen stand sizes and distribution range from small, isolated stands to large, continuous stands.
- 05 The canopy cover and spatial distribution of aspen clones' support habitat connectivity and corridors to ensure that wildlife have hiding cover as well as calving and fawning habitat.
- 06 The composition, structure, and function of aspen stands are resilient to the frequency, extent, and severity of disturbances such as insects, diseases, and fire, as well as climatic variability. Fires are typically frequent, occurring at least every 25 years, and are low-severity, although mixed-severity fires may occur. Seral stage proportions are applied at the landscape scale, as shown in Table 4, where low overall departure from reference proportions is a positive indicator of ecosystem condition.

Table 4. Desired seral-stage proportions for aspen at the landscape scale.

Seral Stage	Dominate vegetation description	Percent proportion
Very Early	Grass, forbs, aspen saplings	20
Early	Aspen saplings and young stands	25
Mid	Mid-aged stands	20
Mid to Late	Mature stands	20
Late	Old stands	15

Objectives (FW-DECIDUOUS-OB)

- 01 To maintain or move towards achieving desired conditions treat a minimum of 5,000 acres of aspen vegetation every 5 years. Treatment types may include mechanical timber harvest and prescribed and managed burning.

Guidelines (FW-DECIDUOUS-GD)

- 01 Coarse woody debris, including downed logs, is available and should typically range from 3 to 5 tons per acre to maintain nutrient cycling, soil biology, and habitat structure for various terrestrial wildlife. Post-action tons per acre may be lower than these levels in areas where low fire behavior is desired, such as wildland urban interfaces and locations with high values at risk.
- 02 To ensure long-term wildlife habitat and ecosystem processes are sustained, snags at least 15 feet tall and 8 inches in diameter should be retained at a minimum of 2 per acre unless this quantity was not present before management action. If the pre-action level was lower than this number per acre, the post-action level should equal the pre-action level.
- 03 To ensure long-term wildlife habitat and ecosystem processes are sustained, downed logs at least 8 feet long with a midpoint diameter of 6 inches should be retained at a minimum of 5 logs per

acre, unless this quantity was not present before management action. If the pre-action level was lower than this per acre, the post-action level should equal the pre-action level.

- 04** To maintain wildlife hiding cover, healthy mature aspen stands that are in proper functioning condition for mature forest structures should be retained or promoted.
- 05** To ensure healthy regeneration of aspen post-disturbance, grazing should resume after a review determines a minimum number of stems per acre that is sufficient to retain and regenerate aspen.
- 06** To ensure adequate regeneration of aspen, livestock grazing should be reduced or limited in stands where suckers are not reaching 6 feet in height due to browsing or where the diversity or structural complexity of native understory species is low.

Goals (FW-DECIDUOUS-GL)

- 01** Management of both wild and domestic ungulate browsing in aspen stands is coordinated with other state and federal partners as well as with permittees.

Woodlands

See Also

Timber Management, Fire and Fuels Management, Livestock Grazing and Range Management, Wildlife, Recreation and Access, and Soil Resources.

Description and Values

The woodland vegetation community on the Manti-La Sal NF is composed of two dominant types: pinyon-juniper and Gambel oak intermixed with mountain shrublands.

Pinyon-juniper woodlands are characterized by the presence of at least one or more species of drought-resistant pinyon pine or juniper. In south and central Utah, these are often two-needle pinyon and Utah juniper trees. Pinyon-juniper woodlands are associated with a wide variety of substrates and topographic settings, but are often found on rugged uplands with shallow, coarse-textured, and often rocky soils that support relatively sparse herbaceous cover. Site conditions, primarily soils and climate, as well as disturbance regimes, most notably infrequent fire, are inherently favorable for tree growth. Pinyon-juniper woodlands are typically found between conifer forest and sagebrush vegetation communities. Woodland structure and composition are highly variable by site and disturbance history, with native forbs, grasses, and shrubs associated with pinyon and juniper dominating the understory. Pinyon-juniper woodlands cover 23 percent of the Forest, approximately 325,770 acres.

Pinyon-juniper is highly valued as wildlife habitat – both for its diverse vegetation and for wildlife migration corridors. These woodlands have also been used extensively by people for gathering pinyon nut and producing charcoal; and the wood has been used for posts and poles.

The expansion of pinyon and juniper stands into former grasslands and shrublands during the past 150 years has been well-documented in many parts of the western United States. Many studies have shown that old trees were usually scattered in low densities throughout these stands, with no evidence that pre-1860 stands were as dense as they are today. Increased stand density may reduce understory plant cover, plant diversity, and water release.

The Gambel oak and mountain shrubland mixed woodland community comprises approximately 14 percent or 197,346 acres of the forest. This community is generally dominated by Gambel oak with a mix of curl-leaf mountain mahogany, serviceberry, and other shrub species; it is rich in a diversity of forbs

and associated grasses. On the Manti-La Sal NF, most of this community is in intermediate and late structural stages, which reflect the lack of recent natural disturbances, specifically fire.

The Gambel oak and mountain shrubland mixed woodland community is important as transitional and summer ranges for big game; elk also use some areas as winter range. In years when there are abundant acorns, mature stands of Gambel oak provide a valuable food source for many species of wildlife, including big game such as deer and elk, black bears, wild turkeys, and assorted birds and small animals.

Desired Conditions (FW-WOODLAND-DC)

- 01** Shrubs, forbs, and grasses, which provide habitat and food for native pollinators, wildlife, and grazing livestock, are healthy and well-distributed across the vegetation community.
- 02** Persistent pinyon-juniper is available for wildlife habitat, cover, and migration needs, and for subsistence gathering.
- 03** Adequate large and contiguous patches of Gambel oak with mature, acorn-producing trees are present to meet the needs of wildlife.
- 04** Sites with old-growth characteristics such as older trees and shallow or rocky soils are maintained to provide valuable wildlife habitat and migration cover or to protect stands with cultural or historical values.

Objectives (FW-WOODLAND-OB)

- 01** Reduce fuels on a minimum of 2,500 acres within Gambel oak and mountain shrub woodlands every 5 years.

Guidelines (FW-WOODLAND-GD)

- 01** To remove nonnative plants that pose a severe risk of invasion, targeted herbicide application should be used as part of all management actions.
- 02** To manage cheatgrass colonization on the forest, management actions in areas susceptible to colonization by this species should include mitigations to limit or avoid its introduction.
- 03** To meet the needs of pinyon-juniper obligate species, such as pinyon jay, projects should be designed to mimic natural conditions for opening patch size and spatial distribution.
- 04** To create and support suitable nesting habitat for pinyon-juniper obligate species, vegetation management actions in persistent pinyon and juniper woodlands should create a patchy-clumpy mosaic; evenly-spaced thinning should be avoided.
- 05** To maintain habitat for multiple wildlife species, vegetation management actions should create a feathered transition zone of approximately 250–500 meters between the treated area and untreated pinyon-juniper woodlands.
- 06** Management actions in pinyon-juniper woodlands should consider seasonal closures and habitat needs related to wildlife breeding during project design.

Shrublands

See Also

At-Risk Plants and At-Risk Animals.

Description and Values

The shrubland community is comprised of sagebrush, desert shrub, and mountain brush with diverse native grass and forb understories. This community is found on approximately 180,645 acres of the forest. It is used by livestock in the spring, summer, and fall. Big game such as deer and elk and greater sage-grouse populations in Utah use sagebrush communities extensively for winter and summer range. However, there are numerous threats to the shrubland community. Utah junipers are increasingly present within the historic shrubland range, displacing sagebrush and, in some instances, mountain shrub communities. Additionally, increasing uncharacteristic wildland fires are occurring due to the presence of invasive grass species, which outcompete the native species. These challenges pose threats to not only the diverse array of native plant and animal species that depend on shrublands, but also the ecosystem services they provide.

Goals (FW-SHRUB-GL)

- 01 Work with partners to model predictive habitat distribution models for at-risk plant and at-risk animal species in shrubland ecosystems.

Desired Conditions (FW-SHRUB-DC)

- 01 Tree canopy cover is less than 10 percent in the shrubland community.
- 02 Contiguous shrub patches that meet the needs of a variety of wildlife species are distributed throughout shrubland communities.
- 03 Shrublands are maintained and sustained in a healthy composition with few to no conifers.

Objectives (FW-SHRUB-OB)

- 01 Restore vegetation, ground cover composition, and structure on a minimum of 1,000 acres of impaired shrubland communities every 5 years.

Guidelines (FW-SHRUB-GD)

- 01 To meet big game habitat needs, management actions should promote a productive, vigorous shrubland component.
- 02 To create suitable nesting habitat for pinyon jays within project areas, vegetation management actions in persistent wooded shrublands should create a patchy-clumpy mosaic. Evenly spaced thinning should be avoided.

Herblands

Description and Values

Herbland communities consisting of perennial forbs and grassland vegetation occupy approximately 8 percent of the forest, comprising approximately 110,358 acres. Perennial forb and grassland ecotypes provide forage for livestock, habitat for wildlife, soil stability, recreational sites, water infiltration and aquifer recharge, water quality within watersheds, and landscape diversity.

Desired Conditions (FW-HERB-DC)

- 01 Herbland communities are diverse, with a species composition dominated by native forbs and grasses. Less than 10 percent of the mapped herblands are composed of shrubs or trees.

Objectives (FW-HERB-OB)

- 01 Restore vegetation, ground cover composition, and structure on a minimum of 20 acres of impaired herbland communities every 5 years.

Guidelines (FW-HERB-GD)

- 01 To retain adequate levels of perennial herbs, onsite and ecological site characteristics including soil texture, depth, and moisture and temperature regimes should be maintained during all management activities.
- 02 To support Nation, Tribe, and Pueblo traditional uses, management actions in herblands should seek opportunities to preserve and enhance medicinal plant species.

Alpine Communities

See Also

At-Risk Animals, At-Risk Plants, Research Natural Areas, and Recreation and Access.

Description and Values

Alpine communities occur above the tree line and are dominated by herbaceous or shrubby vegetation. Alpine ecosystems are strongly influenced by topography, wind, snow deposition, and the short growing season. The alpine community, found above 11,000 feet in the La Sal Mountains, represents about 0.6 percent, or 793 acres, of forest plant communities. The plants found in the alpine communities are often unique to that harsh environment and include an endemic La Sal Mountain species, the La Sal daisy (*Erigeron mancus*), and several other species of interest.

Desired Conditions (FW-ALPINE-DC)

- 01 Trampling, treading, wallowing, and grazing by native and nonnative ungulate species are at levels that do not result in population declines of native plant species, including at-risk plants.
- 02 Alpine ecosystems are resilient to natural- and human-caused impacts and provide refugia for alpine-dependent plant and wildlife species, including at-risk plants and at-risk animals.

Objectives (FW-ALPINE-OB)

- 01 Within five years of plan approval, establish a minimum of twenty repeat-photography study sites to monitor impacts on alpine soil and vegetation from recreation and ungulates.
- 02 Within five years of plan decision, identify and establish at least one alpine site on the forest to contribute to nationwide research on alpine environment response to global climate change.

Guideline (FW-ALPINE-GD)

- 01 To support healthy alpine habitats and manage recreation impacts on the alpine new and future recreational infrastructure should be limited to those necessary for public safety or to manage recreational impacts.
- 02 To minimize or avoid impacts from recreational use on alpine, identified impacted sites should be reclaimed.

Goals (FW-ALPINE-GL)

- 01 Work with state and other partners to monitor alpine vegetation condition and trends to inform management decisions for projects proposed in alpine habitat.

Sparse or Non-Vegetated

See Also

At-Risk Animals and At-Risk Plants.

Description and Values

The non-vegetated or sparse community comprises approximately 33,244 acres of barren rock outcrops, ledges, and talus slopes. These communities have very little to no vegetation. Barren rock communities are interspersed with all other vegetation communities.

Desired Conditions (FW-SPARSE-DC)

- 01** Habitat elements such as rocky outcrops, cliffs, undeveloped springs, and alcoves provide high-quality habitat for associated wildlife and plant species.

Noxious Weeds and Invasive Species

See Also

Watershed and Aquatic Resources, At-Risk Plants, Native Plant Materials, Livestock Grazing and Range Management, Wilderness, Research Natural Areas, Scenic Byways, and Recreation and Access.

Description and Values

Noxious and invasive plants impact many habitats, especially in lower-elevation and boundary areas. In some lower-elevation, pinyon juniper and sagebrush habitats, cheatgrass has invaded in areas that have experienced a disturbance that reduced the amount of desirable perennial species and thus created conditions that were more favorable to cheatgrass invasion. Trace amounts of cheatgrass (less than 5 percent cover) generally do not impact the natural plant community; however, higher amounts can increase fire frequency and size by providing continuous fine fuels (Mealor et al., 2013). Other common noxious and invasive plants such as musk thistle, Canada thistle, and knapweed reduce the production and availability of desirable forage for wildlife, including mule deer, greater sage-grouse, and Brewer's sparrows.

Most inventoried weeds on the forest are near travelways in disturbed areas, such as road shoulders and ditches. Roads and motorized trails are known to be effective vectors for transporting invasive plant seeds. New invasive species continue to be found across the forest, indicating that invasive species are spreading and growing.

Natural- and human-caused disturbances – such as fire, landslides, logging, and road building – alter resource availability in forests by opening canopies, reducing above- and below-ground competition, exposing mineral soil, or directly increasing resources available to invasive species (Kerns & Guo, 2012).

Desired Conditions (FW-WEEDS-DC)

- 01** Invasive species and noxious weeds are either not present or in low abundance and do not disrupt ecological processes or diminish the ecological integrity and resilience of vegetation groups.
- 02** Desired nonnative species are used, when appropriate, to enhance or sustain ecological integrity and support healthy, functioning ecosystems. These species do not invade into or displace neighboring resilient native communities.

- 03** New noxious weed establishments occur infrequently or not at all in terrestrial, riparian, and aquatic communities. Existing noxious weeds are at densities that do not disrupt ecological processes or diminish the ecological integrity and resilience of native vegetation communities.

Objectives (FW-WEEDS-OB)

- 01** Map, inventory, and take action to reduce noxious and invasive weeds on a minimum of 500 acres annually.

Standards (FW-WEED-ST)

- 01** State-certified, weed-free materials, including but not limited to hay, straw, mulch, and gravel, or borrow materials shall be used during all management activities.
- 02** Weed prevention and control provisions shall be included in all new agreements, contracts, and special-use authorizations when authorized activities present a high risk for weed infestation or the location of the activity is vulnerable to weed introduction or spread.
- 03** Those authorized to conduct soil-disturbing activities shall be required to control noxious weeds in the disturbance area of their actions during project implementation.

Goals (FW-WEEDS-GL)

- 01** Coordinate management actions and strategies for noxious weed and invasive species control and prevention not only across resource programs, but also with county, state, regional, tribal and other federal managers, as well as academic research institutions, and private landowners.

Native Plant Materials

See Also

Noxious Weeds and Invasive Species, Pollinators, At-Risk Plants, At-Risk Animals, Livestock Grazing and Range Management, and Wildlife.

Description and Values

Native plant materials are those plants, seeds, and other materials that promote the continued presence, as well as reestablishment, of native species within Manti-La Sal NF ecosystems. Native plant materials are key to ecosystem health, resiliency, and productivity. Retention of existing native plant communities across the forest is the ideal way to retain a healthy functioning ecosystem, which in turn provide cultural and economic benefits; however, in some areas, native plant communities are missing or severely impacted. Promoting the use of native plant materials for the revegetation, restoration, and rehabilitation of native plant communities is one way to conserve ecosystem diversity and maintain healthy ecosystem functions. Disturbances on the landscape allow for noxious and invasive plant species to enter the ecosystem and establish more readily than most native plant species. Therefore, our ability to repair damaged lands and stem the loss of associated cultural and economic benefits largely depends upon the availability of genetically-appropriate native seed and native plant stock or – where appropriate – non-invasive, introduced species, to reduce the spread of invasive and noxious plant species.

Desired Conditions (FW-NPM-DC)

- 01** Locally-sourced, site-appropriate native plant materials are available and routinely used in revegetation, rehabilitation, and restoration of both aquatic and terrestrial ecosystems. Seed mixes will be determined based on ecological site, availability, and economic feasibility.

Guidelines (FW-NPM-GD)

- 01** To ensure ecological integrity, resilience, and function and reduce or eliminate invasive plant species, all rehabilitation management activities should use native plant materials, including plant materials that are pollinator species friendly. Nonnative plant materials should only be used in plant communities where ecological integrity, resilience, and function have already been compromised by, or are susceptible to, invasive plants. If used, nonnative plant materials should have moderate to high resource values with proven capability to compete with invasive plants, but they should not invade and displace neighboring resilient native communities.
- 02** To reduce or eliminate invasive plant species, revegetation should occur within one year of any ground-disturbing activity. Seeding should be carried out with plant materials that are proven to outcompete invasive plants species.
- 03** To reduce or eliminate invasive plant species after fires, seeding should occur within the same growing season as the fire. Seeding should be carried out with plant materials that are proven to outcompete invasive plant species.

Goals (FW-NPM-GL)

- 01** Support and accommodate research by federal, state, and private entities that improves native plant seed genetics as well as increases native and locally-sourced plant material selection, production, and distribution for ecological restoration.
- 02** Cooperate and coordinate within the Forest Service and with other federal agencies, tribes, state, organizations, and private industry in the development of native plant materials and supplies program.

At-Risk Plants

See Also

Watershed and Aquatic Resources, Alpine, At-Risk Animal Species, Noxious Weeds and Invasive Plant Species.

Description and Values

The Manti-La Sal National Forest provides quality habitat for over thirty at-risk plant species, primarily species of conservation concern, as well as federally-listed species. The Fish and Wildlife Service maintains the most up-to-date federally-listed species list and the list of species of conservation concern (SCC) may also change upon approval of the Regional Forester. See Appendix B: At-Risk Species List for all plant species and forest occurrence locations at the time of the record of decision.

Desired Conditions (FW-RISKPLANT-DC)

- 01** Ecological processes create vegetation conditions and patterns across the forest that are consistent with properly functioning condition.
- 02** Areas of exposed bedrock, outcroppings, and rims are available to support and maintain at-risk plant species.
- 03** High elevation, at-risk plant species have enough scree, colluvium, and undisturbed alpine turf to provide for their persistence.
- 04** Hanging gardens support distinctive plant species and communities that contribute to local and regional biodiversity, including at-risk plant species.

Objectives (FW-RISKPLANT-OB)

- 01** Establish an inventory and monitoring plan for at-risk plant populations within five years of plan approval.
- 02** Establish a conservation strategy plan for all SCC plants within the life of the plan.

Standards (FW-RISKPLANT-ST)

- 01** Avoidance, buffers, design features, mitigations, and considerations of project timing shall be incorporated into ground-disturbing projects that may affect occupied habitat for at-risk plant species.

Guidelines (FW-RISKPLANT-GD)

- 01** Talus, scree, cliffs, seasonally wet areas, and colluvium habitat elements that provide refugia for high-elevation at-risk plant species should be avoided when proposing ground-disturbing activities – including trail construction and maintenance and vegetation restoration and reclamation projects – unless these actions are undertaken to enhance at-risk species' habitats or populations.
- 02** To maintain at-risk plant species populations, disturbance should be minimized in exposed rock outcroppings, bedrock, and rims where at-risk plant species occur.

Goals (FW-RISKPLANT-GL)

- 01** Develop partnerships to collect baseline population data for all at-risk plant species.
- 02** When available, management of at-risk plant species will follow current conservation strategies and agreements with other agencies and partners.

Wildlife

See Also

At-Risk Animal Species, Pollinators, Areas of Tribal Importance, Watershed and Aquatic Resources, Horn Mountain and Wildcat Knolls Geographic Area, Elk Ridge Geographic Area, Vegetation Communities and Resources, and Recreation and Access.

Description and Values

The Manti-La Sal National Forest contributes a range of ecological conditions that support the long-term persistence of wildlife, fish, and plants. Within the range of landscape capability, forested and non-forested vegetation, including wetland and riparian vegetation, comprise a variety of structural conditions and characteristics that support species requirements. Ecosystems across the forest provide the necessary habitat and ecological conditions that contribute to the sustainability of species, including at-risk animals. Habitat conditions, including vegetation quantities, distribution, and characteristics, contribute to meeting the specific needs of a wide array of terrestrial and aquatic species.

In some cases, habitat quality has been modified because of road construction, timber harvest, wildland fire or fire suppression, recreation, and grazing. An important aspect of quality wildlife habitat is maintaining large blocks of diverse, healthy vegetation communities, as well as high water quality and good stream channel and riparian conditions. Part of the Forest Service's mission is to manage habitat for the benefit of wildlife species and to ensure that all its management activities are designed to avoid or minimize adverse impacts on wildlife individuals and populations. The public consistently identifies habitat conservation as an extremely high management priority for national forest lands.

Desired Conditions (FW-WILDLIFE-DC)

- 01 Landscape patterns provide habitat connectivity for native species, particularly wide-ranging species such as mule deer and Rocky Mountain elk. Habitat connectivity promotes daily and seasonal movement of animals to facilitate maintenance of genetic diversity.
- 02 Habitat connectivity for big game is maintained by managing road densities and large blocks of habitat.
- 03 Multiple and secure occurrences of wildlife habitats exist across the landscape so that alternative habitats may be used by wildlife following disturbance events and during crucial times of the year.
- 04 Big game and other species of socioeconomic interest have habitats with sufficient cover, forage, and security, allowing animals to prosper to maintain harvestable populations.
- 05 Suitable habitats for resident and migratory birds provide key life history requirements, such as nesting, foraging, and wintering.
- 06 Caves, mines, cracks, rock cavities, and other underground habitats provide undisturbed suitable habitat for native bat species and populations to raising young, roost, and hibernate.
- 07 Habitat conditions provide the necessary quality and spatial arrangement of forage, security, and cover for Rocky Mountain elk and mule deer on mapped winter and summer range.
- 08 Healthy, resilient habitats and related enhancements, such as habitat management actions and range improvements, support native and desirable nonnative fish and wildlife species.
- 09 Nest, den sites, and other breeding and rearing areas for birds are undisturbed during the period during which they are active in those sites or areas.
- 10 Nonnative or introduced wildlife species are only present when they do not pose a threat to the long-term persistence of native species or their habitat.

Objectives (FW-WILDLIFE-OB)

- 01 Construct or re-design a minimum of four water sources for wildlife within ten years of the plan approval.

Standards (FW-WILDLIFE-ST)

- 01 All open-top vertical pipes with an inside diameter greater than one inch, including but not limited to those used for fences, survey markers, building plumbing vents, or signs, shall be equipped or guarded with caps or mesh wire to prevent animal entrapments.

Guidelines (FW-WILDLIFE-GD)

- 01 To avoid disturbance to roosting, hibernating, or breeding bats, management actions should not occur in caves, mines, and other habitats known to be used by bats.
- 02 To maintain bat populations, monitoring and surveying should occur prior to reclamation of abandoned mines to determine if the mines are used by bats. If bats are present, population enhancement and protection measures – including seasonal closures, public education, and wildlife-friendly closures such as gates – should be installed unless absolute closure is necessary for human safety.
- 03 To minimize hazards to wildlife, new fence installation or reconstruction should be sited and designed to allow wildlife movement.

- 04** To maintain healthy ecological conditions across the forest, introduced or nonnative wildlife species should be removed when their presence adversely affects native species or their habitat.
- 05** To protect big game during seasonal occupation, management actions in key winter and summer range should be avoided or minimized during the period of use.
- 06** To maintain or enhance big game habitat, vegetation management actions in key winter and summer range should be designed to maintain or enhance forage, cover, and other habitat components for these species.
- 07** To minimize or avoid potential adverse impacts to nesting raptors when implementing management activities, a raptor survey or nest search should be conducted when existing raptor information is unavailable or determined to be insufficient. If survey is warranted, the level of survey should be determined by project type and scale, habitat suitability models, standard protocols, past survey results, and other best available scientific information.

Goals (FW-WILDLIFE-GL)

- 01** Collaborate with other agencies and local partners to improve and enhance existing fish and wildlife habitat.
- 02** Coordinate with other federal, state, tribal and local land management agencies to monitor species identified in their management plans. This may include, but is not limited to, species identified in their wildlife action plans, big game management plans, and US Fish and Wildlife Service recovery plans.

At-Risk Animals

See Also

Watershed and Aquatic Resources, At-Risk Plant Species, and Vegetation Communities and Resources.

Description and Values

At-risk animal species consist of federally-listed threatened, endangered, proposed, and candidate species and Species of Conservation Concern within a plan area. Species of Conservation Concern (SCC) are wildlife or plants, other than federally-listed species, that are known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area. Appendix B: At-Risk Species, includes all species identified at the time of the forest plan decision; this list maybe updated over the life of the plan. The Fish and Wildlife Service maintain the most up-to-date list of federally-listed species and the list of SCC may also change upon approval of the Regional Forester.

For many at-risk animal species, plan components for specific vegetation communities, like those in the vegetation and watershed and aquatic resources sections, are adequate to ensure essential ecological conditions are met for the species so that the species persists. However, for other at-risk animals, species-specific plan components, including, but not limited to timing restrictions, nest buffers, and spring development protections, maybe required to ensure persistence. Those components are found here, in addition to those listed in the broader wildlife components.

Desired Conditions (FW-RISKANIMAL-DC)

- 01** Habitats for at-risk animal species support self-sustaining populations and contribute to the survival, stability, recovery, and de-listing of federally-listed species known to occur in the plan area.

- 02 Cliffs and talus provide undisturbed habitat suitable for high-elevation, at-risk animal species.
- 03 The range, status, and threats to at-risk animal species are understood.
- 04 To support the persistence of the Mexican spotted owl, habitat with heterogeneity and varying structure in patches with interlocking trees crowns, including a high percentage of canopy cover, and mature forest components such as large trees, snags, and down woody debris is available within suitable Mexican spotted owl habitat.
- 05 Habitats for SCC are restored, sustained, and enhanced to improve the biological and genetic diversity of natural ecosystems.

Objectives (FW-RISKANIMAL-OB)

- 01 Develop habitat suitability models for all SCC species within 5 years of plan approval.

Standards (FW-RISKANIMAL-ST)

- 01 Management actions in occupied, at-risk animal species habitat shall include design features or mitigations and project timing considerations, as appropriate, to ensure maintenance of species populations.
- 02 Ground-disturbing activities, including livestock grazing, shall not occur in identified Boreal toad breeding sites, regardless of whether it is breeding season or not, unless these activities improve Boreal toad habitat or the breeding sites are fenced from livestock use.
- 03 Management activities in designated Mexican spotted owl territories shall not occur during the breeding season, March 1 to August 30.
- 04 Recreation special use permits for overnight use within designated Mexican spotted owl territories shall not be authorized during the breeding season, March 1 to August 30.
- 05 Management of at-risk animal species shall follow current conservation strategies and agreements, when available.
- 06 Management activities and special uses occurring within federally-listed species habitat shall integrate habitat management objectives and species protection measures from the most recent, approved US Fish and Wildlife Service recovery plan.
- 07 Activities shall not disturb or destroy talus habitats occupied by American pika unless the disturbance can be mitigated.

Guidelines (FW-RISKANIMAL-GD)

- 01 To maintain at-risk animal species populations, talus, scree, cliffs, and colluvium habitat elements that provide refugia for high-elevation at-risk animal species should be avoided when proposing ground-disturbing activities.
- 02 To maintain self-sustaining populations of at-risk aquatic animal species, management activities that may disturb native salmonids or have the potential to directly deliver sediment to their habitats should be limited to times outside of spawning and incubation seasons (January 1 – July 1).
- 03 To avoid adverse impacts to Mexican spotted owls and their habitat, surveys based on US Fish and Wildlife Service-approved protocols should be completed prior to management activities in

Mexican-spotted owl modeled breeding/roosting habitat and in designated critical habitat that includes the primary constituent elements as defined in the species recovery plan.

- 04 To support at-risk animals and other wildlife, construction, and reconstruction of diversions at springs developed for livestock use should maintain a minimum flow at the spring source sufficient to support animals and wildlife.

Goals (FW-RISKANIMAL-GL)

- 01 Management of at-risk animal species will follow current conservation strategies and agreements with other agencies and partners, when available.
- 02 Partner with other land management agencies to manage at-risk animal species habitats and to monitor these species.

Pollinators

Description and Values

Pollination is a valuable ecosystem service provided to society by honeybees, native bees, other insect pollinators, birds, and bats. Pollinators serve a crucial role in the US economy, food security, and environmental health. Simultaneous declines in native and managed pollinator populations globally, with highly-visible decreases in honeybees, bumble bees, and monarch butterflies, have brought into focus the importance of pollinator conservation. Declines in many pollinator groups are associated with habitat loss, fragmentation, and deterioration; invasive species; new and emerging diseases and pathogens; and improper use of pesticides.

Desired Conditions (FW-POLLINATOR-DC)

- 01 Vegetation communities include a diversity of forbs and flowering shrubs that provide floral resources throughout the year, suitable nesting materials and sites, and large areas free from pesticides to support diverse and sustainable native pollinator populations.
- 02 Native pollinator populations can absorb disturbance events, without species elimination.

Standards (FW-POLLINATOR-ST)

- 01 Special use permits for apiaries shall not be issued for placement of hives within 5 miles of known insect-pollinated, at-risk plant species locations or at-risk insect populations.
- 02 A maximum of 20 hives shall be issued for each apiary special use permit.

Guidelines (FW-POLLINATOR-GD)

- 01 To maintain pollinator populations, restoration activities should include use of pollinator-friendly seed mixes and best management practices.
- 02 To maintain pollinator populations, pollinator-friendly best management practices and seed mixes should be used when maintaining or constructing facilities and following other ground-disturbing activities.
- 03 To maintain pollinator functions in the ecosystem, the use of pesticides toxic to insect pollinator species or that will remove useful floral resources should be minimized. To maintain native bee populations, the most recent best available science should be used to review a proposal to issue an apiary special use permit.

- 04** To maintain native bee populations, site-specific prescriptions for apiary special use permits should be developed.

Goals (FW-POLLINATOR-GL)

- 01** Work with partners to identify and foster opportunities to assess current pollinator habitat conditions, pollinator and wildflower populations, and potential drivers of change in these populations.

Cultural and Heritage Resources

See Also

Areas of Tribal Importance, Recreation and Access, Scenery Management, Wildland Fire and Fuels Management, Watershed and Aquatic Resources, Great Basin Station Historic District, and Pinhook Battleground National Register Site.

Description and Values

The Manti-La Sal National Forest includes a wide variety of cultural resources that are important to federally-recognized Nations, Tribes, and Pueblos; rural historic communities; and forest visitors. Many of these resources are managed through federal regulations, such as the National Historic Preservation Act or Forest Service manual direction. They include such places as archaeological sites or traditional cultural properties that are eligible or ineligible for listing on the National Register of Historic Places. Also included are museum collections, unevaluated for National Historic Preservation Act sites, and unidentified archaeological sites. Other cultural resources are managed through executive order or Forest Service guidance, including sacred sites, sacred landforms, sacred landscapes, and plant communities and minerals used in traditional and ceremonial activities.

Nation, Tribe, and Pueblo, cultural and sacred landscapes consist of interconnected villages, farmsteads, campsites, agricultural features, lookout structures, ceramic kilns, roads and trails, and resource extraction locales. Historic period landscapes are made up of networks of historic mines, homesteads, roads, ditches, livestock herders' camps, and Forest Service facilities. For example, livestock grazing, ranching, farming, and agricultural production are essential elements of Utah's history and culture. Other historic period features include Civilian Conservation Camps and historic period conflict sites. Modern cultural and sacred landscapes are places where Nations, Tribes, and Pueblos still carry out traditional and ceremonial activities critical to cultural identity and well-being, where rural historic communities continue traditional ways of life, and where visitors come to learn about other cultures and experience these sacred landscapes.

These cultural resources located on the Manti-La Sal NF are of unique importance because of their abundance and their connections to living communities. Taken together, they tell compelling human stories from over 12,000 years of settlement and thereby connect people. The collective importance of these resources is greater than taken individually because together, they comprise high value cultural and sacred landscapes. The Elk Ridge Geographic Area on the Monticello portion of forest is just such a case. This geographic area protects and enhances the particularly dense and unique cultural and sacred landscapes it encompasses.

The Manti-La Sal NF contains distinctive landscapes, cultural histories, and socioeconomic characteristics that contribute to the surrounding communities. The forest contributes resources and uses that are important to federally-recognized Nations, Tribes, and Pueblos; rural historic communities; and other communities that pre-date the establishment of the national forests -- and which have historic, cultural, and social connections to the Manti-La Sal.

Desired Conditions (FW-CULTURAL-DC)

- 01 Cultural resource conditions for known or documented sites are stable; changes to site conditions are identified and documented through monitoring.
- 02 Undocumented cultural resources are identified and documented and their condition assessed.
- 03 Cultural landscapes and their component parts are managed in ways that preserve their condition and value to pueblos, tribes, nations, local communities, and visitors, as well as for their outstanding ability to contribute to regional archaeology and history.
- 04 Cultural resource sites and cultural landscapes are managed for their outstanding ability to contribute to tribal well-being, and understanding of local and regional archaeology, and the local economy.

Objectives (FW-CULTURAL-OB)

- 01 Conduct at least two volunteer projects each year that help to identify new sites or update condition information on known sites.
- 02 Monitor the condition of at least 20 sites per year.
- 03 Complete surveys on a minimum of 100 acres of land each year to identify new sites or update information on known sites.
- 04 Update documentation on three sites per year for which current documentation is inadequate or outdated, to establish their current condition.
- 05 Conduct five public presentations or cultural resource studies each year.
- 06 Within three years of plan approval, develop and maintain a database with maps for fire-sensitive cultural resources that is available for fire-management and fuel-reduction planning and for resource protection during fire management activities.
- 07 Over the life of the plan, nominate at least three sites to the National Register of Historic Places.

Standards (FW-CULTURAL-ST)

- 01 Cultural resources, including archaeological sites, historic sites, cultural landscapes, districts, and traditional cultural properties that are managed according to National Historic Preservation Act regulations shall be maintained and managed to preserve their National Register of Historic Places characteristics and integrity of location, design, setting, materials, workmanship, feeling, or association.
- 02 Data recovery or other mitigation measures shall only be undertaken when disturbances cannot be halted and only after appropriate consultation with pueblos, tribes, nations, and the State Historic Preservation Office.
- 03 Camping shall not be authorized within historic and pre-contact structures or alcoves that contain cultural resources.
- 04 Campfires shall not be authorized within archaeological sites.
- 05 Salt or other edible attractants to livestock and wildlife shall not be authorized for placement in cultural sites.

Guidelines (FW-CULTURAL-GD)

- 01** To ensure that cultural resources – including sacred sites, plant populations and communities, and sacred landscapes – are managed according to executive orders, management actions should preserve or enhance their ecological condition; characteristics contributing to solitude, privacy, and quiet; and scenic character.
- 02** To enhance the resilience of cultural resources to fire, wildland fire protection activities and fuels management projects should consider benefits to cultural resource preservation and resiliency, including reducing fuels around cultural sites vulnerable to fire.
- 03** To respect tribal values, measures to protect cultural resources from deterioration due to natural forces, visitation, and agency-authorized and unauthorized use should be developed collaboratively with pueblos, tribes, nations.
- 04** To protect cultural resources, the effects of natural disturbance, such as wildland fire, erosion, and freeze-thaw cycles, which might be accelerated by climate change, should be proactively managed.
- 05** Decisions regarding the stabilization of pueblo, tribe, and nation sites with standing architecture should be made with respect to the tribal value that these sites complete their natural life cycles. Tribal values should be given first consideration, followed by safety, archaeological, and interpretive values.
- 06** Stabilization should only be considered for sites in Rural, Roded Natural, and Semi-Primitive Motorized recreation opportunity spectrum classes, and only when it will help protect other site values.
- 07** To identify traditional cultural properties and to connect the forest to tribal communities, opportunities to conduct ethnographic studies on the forest in partnership with Nations, Tribes, and Pueblos should be sought.

Goals (FW-CULTURAL-GL)

- 01** Appropriate management activities are designed in consultation with pueblos, tribes, nations, rural historic communities, and the State Historic Preservation Office.
- 02** Interpretation of and education about cultural resources is conducted in collaboration with pueblos, tribes, nations, and rural historic communities.
- 03** Opportunities for volunteers to partner with the forest heritage program to identify, study, protect, and monitor sites are offered. These include developing and maintaining opportunities for pueblos, tribes, nations, universities, and volunteer organizations.

Areas of Tribal Importance

“Tribal sovereignty was not granted to tribes by the United States government. Sovereignty is how tribes have always governed themselves; it has always existed. And the land is the foundation of that sovereignty.” Betsy Chappoose, Ute Indian Tribe of the Uintah and Ouray Reservation

The Manti-La Sal National Forest respectfully acknowledges and recognizes that these forest lands are the ancestral and traditional lands of Nations, Tribes, and Pueblos. We are but tenants and managers of these sacred tribal landscapes.

See Also

Cultural and Heritage Resources, Recreation and Access, Scenery Management, Wildland Fire and Fuels Management, Watershed and Aquatic Resources, Great Basin Station Historic District, and Pinhook Battleground National Register Site.

Description and Values

The entire forest is an area of Tribal importance. In addition, important groupings of ancestral sites, landscapes, and natural resources of interest and value to Federally-recognized Nations, Tribes, and Pueblos on the Manti-La Sal National Forest represent specific areas of Tribal importance. These are part of larger landscapes of ancestral homes, plants, animals, and sacred geography that are all interrelated and linked to Tribal history. These places represent the footprints of cultural identity and connect people to their cultural roots and are where tribal members continue traditional practices.

Desired Conditions (FW-TRIBAL-DC)

- 01 Forest resources important for cultural and traditional needs, as well as for subsistence practices and economic support of tribal communities – such as fuel and ceremonial wood products, minerals, medicinal and food plants, and objects of cultural patrimony – are available and sustainable.
- 02 Cultural practices associated with tribal use of forest resources are protected and authorized activities are designed to protect the ability of Nations, Tribes, and Pueblos to conduct those practices.

Objectives (FW-TRIBAL-OB)

- 01 Within 5 years of plan approval, work with Nations, Tribes, and Pueblos, to identify culturally-significant resources, such as springs and areas for hunting, gathering plants, and gathering wood; management strategies to protect and restore these resources.
- 02 Meet semi-annually with Nations, Tribes, and Pueblos to collaborate, partner, and ensure that important resources and places are available for tribal use and are protected from authorized and unauthorized uses.

Standards (FW-TRIBAL-ST)

- 01 All sensitive cultural information will remain confidential and safeguarded from public release. This includes locations of cultural resource sites, traditional beliefs, cultural and traditional activities, and Light Detection and Ranging or LiDAR data.
- 02 Ethnographic or other sensitive information will be kept in a locked filing cabinet; Nations, Tribes, and Pueblos will identify which forest staff have access to that information. Only Nations, Tribes, and Pueblos shall approve release of that information to other designated parties.
- 03 The forest shall consult with Nations, Tribes, and Pueblos early in the project-planning process to provide enough time for meaningful consultation.
- 04 Reburial locations shall be identified in consultation with Nations, Tribes, and Pueblos and will be available for their use when requested.
- 05 Traditional indigenous and ecological knowledge will be actively sought and incorporated in planning for management actions, protocols, and projects.

Guidelines (FW-TRIBAL-GD)

- 01** To ensure Nations, Tribes, and Pueblos and their representatives can conduct ceremonial activities in private, temporary area closures should be granted, if requested.
- 02** To promote respect for tribal values, large, easy-to-read signs should be placed along forest roads at entrance locations, which tell people that they are entering a traditional sacred area, instruct them on how to show respect, and include a phone number to call to report looting or vandalism.
- 03** To ensure tribal access to culturally-valued forest resources, permits for collecting and gathering forest resources for cultural and traditional ceremonies and practices should be available. Free tribal and personal use permits for collecting and gathering forest resources should be administered collaboratively with tribal governments.
- 04** To respect tribal values, plant populations and plant communities of tribal value should be protected during fuels reduction activities.
- 05** To identify ways to protect traditional practice cultural resources from adverse impacts due to visitation or other proposed management actions, the forest should collaborate with tribal representatives during site-specific project design.
- 06** To protect cultural resources, management actions such as fencing, or relocation of infrastructure should be taken if adverse impacts from livestock grazing are identified.

Goals (FW-TRIBAL-GL)

- 01** Develop new working relationships with Nations, Tribes, and Pueblos who have living connections with the lands that make up the Manti-La Sal National Forest.
- 02** Establish meaningful government-to-government relationships with Nations, Tribes, and Pueblos so that tribal perspectives and traditional indigenous and ecological knowledge inform forest management actions and decisions.
- 03** Partner with Nations, Tribes, and Pueblos to identify resource-management projects or settings that provide educational opportunities for tribal youth.
- 04** Partner with Nations, Tribes, and Pueblos to identify sacred sites, traditional cultural properties, cultural landscapes, plant communities, springs, rocks and minerals, and other areas of tribal importance and cooperatively develop appropriate management strategies to protect or improve their values and associated historical, ethnographic, and archeological information.
- 05** Collaborate with tribal representatives to create opportunities to educate forest employees about cultural sensitivity protocols, tribal legal rights, treaty obligations, and the unique standing of Native Nations.
- 06** Facilitate Nations, Tribes, and Pueblos telling of their own stories and assist in developing interpretive messages and educational materials that include their telling of their own stories.
- 07** Invite Nations, Tribes, and Pueblos to identify cultural resources on the forest that might only be recognized by those who know traditional practices and develop management strategies to protect them.
- 08** Involve tribes in the management of cultural resources and areas of tribal importance, including identifying management actions where cultural resources, traditional cultural properties, or cultural landscapes are being damaged by visitation or by other human or natural forces.

Recreation and Access

See Also

Scenery Management, Moab Geographic Area, and Elk Ridge Geographic Area.

Description and Values

The Manti-La Sal National Forest comprises a varied landscape and serves diverse communities across its Ferron, Price, Sanpete, Moab, and Monticello Ranger Districts. Although emphasis is on dispersed recreation, allowing visitors to escape the routine of life and enjoy a less-structured natural environment, a wide variety of developed recreation opportunities are available as well. Management is motivated by both resource protection and visitor freedom.

The forest delivers natural settings with opportunities for high-quality recreation, solitude, and an escape from everyday life. Recreation includes camping, cross-country/backcountry skiing, birdwatching and wildlife viewing, fishing and big game hunting, hiking, rock climbing, horseback riding, motorized and nonmotorized trail experiences, mountain biking, open-water activities, kite boarding, snowboarding, and winter over-snow vehicle activities.

Developed recreation opportunities range from small campgrounds – with 10 to 12 units – to larger, more consistently occupied campgrounds, such as those at Joes Valley, Warner Lake, Devil’s Canyon, and Lake Canyon. Group sites accommodating 30 to 50 people are available at most campgrounds, providing desirable settings for summertime larger-family gatherings. Seven former guard stations have been added to the cabin rental program and each has become increasingly popular. A connected system of vista corridors offers a diversity of spectacular views and interpretation of landscapes at various places across the forest.

Dispersed camping next to vista corridors and along many other forest roads has been occurring for generations. Many of these campsites have expanded over time to become launch points for the creation of non-system routes. Dispersed-site designation and containment to protect surrounding natural resources has proven successful along Huntington Canyon, 12-Mile Canyon, and the Miller Flat Road and should continue as a management tool.

Data from campground reservations, trail and road use, and commercial recreation permits across the forest indicate a significant upward trend in recreation uses. The agency’s National Visitor Use Monitoring data reports that there are now more than 1 million people living within 50 miles of the forest, which represents a 30 percent increase since 2000.

The Ferron, Price, and Sanpete Ranger Districts are characterized by the open, rolling terrain of the San Pitch Mountains and Wasatch Plateau, located within 1 or 2 hours of a million people on the Wasatch Front around Salt Lake City and its suburbs. City residents are afforded an escape from their urban environment, while residents in the small communities in Sanpete and Castle Valleys enjoy their greater proximity and connection to the forest.

Recreation use on the Ferron, Price, and Sanpete Ranger Districts is primarily motorized, with over 200 miles of motorized trails, including the Arapeen Off-Highway Vehicle Trail System, and over 1,200 miles of road, much of which is used primarily for OHV-related recreation. There are also renowned winter snowmobile opportunities in the Skyline, Joes Valley, Ephraim, Manti, and 12 Mile Canyon snowmobile complexes. A wide variety of camping opportunities are found on these districts: dispersed and undeveloped camping and twenty-six developed campgrounds; additionally, six former guard stations are available for rent. Finally, world-class climbing destinations in Maple Canyon and Joes Valley and the unique snow-kiting experience at Big Drift are just three examples of the nonmotorized gems found on the Ferron, Price, and Sanpete Ranger Districts.

The Moab and Monticello Ranger Districts comprise three distinct landscapes: the La Sal Mountains, Abajo Mountains, and Elk Ridge area. The La Sal Mountains serve as the backdrop to Arches and Canyonlands National Parks and are the backyard for the recreation destination community of Moab, Utah. The La Sal Mountains provide respite from the surrounding desert heat and important recreation opportunities for locals, as well as tourists from around the world. Mountain biking is a popular activity on this portion of the forest, as are the more traditional recreation activities of hunting, hiking, and camping. Winter recreation is a growing use in the La Sal Mountains, with Nordic and backcountry skiing in the Geyser Pass area and over-snow vehicle use on the east side of the La Sal Mountain range. A variety of authorized outfitter and guides and recreation events use the range, providing direct economic benefits to the local community.

The Abajo Mountains and Elk Ridge area make up the rest of the Moab and Monticello Districts. This area comprises high mountains, plateaus, and canyons. The Abajo Mountains are an important recreation resource for the adjacent communities of Monticello and Blanding, providing popular dispersed camping, as well as both motorized and nonmotorized trail opportunities. The Elk Ridge area includes a portion of Bears Ears National Monument and provides outstanding opportunities for backpacking and visiting cultural resources in a backcountry setting. The area also provides for high-value, big game hunting.

Additionally, the forest offers opportunities for heritage tourism through the interpretation of the many people – both in the past and present – whose lives are intertwined with the lands that now make up the national forest. These include historic Nations, Tribes, and Pueblos; hunters and farmers; historic European American loggers; coal, uranium, and gold miners; livestock grazers; and water users who built extensive reservoir and canal systems on the forest.

Desired Conditions (FW-REC-DC)

- 01** Recreation opportunities reflect a unified approach to recreation, to be a forest rich in family tradition, which provides a well-connected system of byways, backways, and trails with spectacular views; interpretation of historic landscapes; and dispersed recreation opportunities for visitors to escape the routine of life and enjoy their forest in a less-structured setting.
- 02** Existing and new recreation sites, facilities, and trails minimize environmental impacts, are accessible, enduring, low-maintenance, complement the natural setting, and are adaptable to new recreation demands.
- 03** Dispersed recreation sites are available in desirable locations, managed to reduce the risk of social and environmental impacts, and compatible with the recreation opportunity spectrum setting and current travel management plans.
- 04** Healthy forest vegetation in developed recreation sites complements recreational activities, scenery, and safety.

Objectives (FW-REC-OB)

- 01** Complete a condition assessment for each developed recreation site every five years.

Standards (FW-REC-ST)

- 01** To comply with existing forest orders, camping shall be prohibited in dispersed sites within one-quarter mile of developed fee sites.
- 02** All new or renovated recreation facilities, sites, and programs comply with applicable federal and Forest Service accessibility guidelines and standards.

- 03** The built environment and resource conditions at developed recreation sites shall be consistent with assigned scenic integrity objectives, the Forest Service Built Environment Image Guide (BEIG), and applicable land management and vegetation management plans.
- 04** Recreation facilities and trails shall be consistent with the recreation opportunity spectrum class designations and specialized plans, including, but not limited to, wilderness, scenic byway, and trail management plans.
- 05** Culinary water systems shall only be provided at a minimal level of service within developed recreation sites when human health and safety deem it necessary. If necessary, a minimal level of service, such as a well with hand pump or limited-service connection distribution system, shall be provided.
- 06** Permits for landing, taking off, or dropping materials or supplies from aircraft powered by airmen (airplane, rotorcraft, glider, lighter-than-air, powered lift, powered parachute, and weight-shift control aircraft) as defined by 14 CFR Part 1 (United States of America, 2023), shall be required, and shall include designation of sites for these actions, except in cases of emergency needs or administrative use.

Guidelines (FW-REC-GD)

- 01** To create economically and operationally sustainable developed recreation, sites where fee revenues do not sustain operational costs should be managed at reduced service levels unless resource benefits or safety indicate a need to continue management at a higher service level.
- 02** To minimize conflicts between recreation users and vegetation management, activities that would substantially diminish recreation experiences – such as negatively affecting the scenic or acoustic setting, rendering facilities unusable due to facility construction or repair, or timber cutting – should not be scheduled at developed sites on weekends or holidays between Memorial Day and Labor Day, except in cases of wildland fire management or when doing so would preclude achieving project goals.
- 03** To protect the recreation experience and facilities, where livestock grazing allotments and developed recreation sites overlap, developed recreation sites should be fenced where possible to exclude livestock grazing. If fencing is not possible, timing restrictions should be used.
- 04** To maintain quality recreation experiences, dispersed camping and associated vehicle access near lakes, streams, springs, and wetlands should be managed to protect riparian and aquatic ecosystems.
- 05** To maintain quality recreation experiences, new utility corridors should be located outside of developed recreation sites and high-use dispersed sites.
- 06** To protect cultural, aquatic, and wildlife resources; reduce user conflicts; and ensure health and safety, dispersed sites, areas, and travel routes should be closed, either permanently or seasonally, when a high risk of damage is identified.
- 07** Recreation activities should occur at levels that are sustainable and respectful of Nation, Tribe, and Pueblo and rural historic community concerns about site degradation. Site visitation management should protect the condition of sites and cultural landscapes and other values of importance to Nation, Tribe, and Pueblo, and rural historic communities.

Goals (FW-REC-GL)

- 01 Coordinate with local communities and local, state, and tribal tourism organizations to promote an integrated recreation experience for visitors, as well as to better respond to local and regional recreational demands, diversity, and interests.

Recreation Opportunity Spectrum

Description and Values

The recreation opportunity spectrum, also known as the ROS, offers a framework for understanding the relationships and interactions among the different types of recreation on the Manti-La Sal National Forest. The spectrum consists of six major classes for Forest Service use: urban, rural, roaded natural, semi-primitive nonmotorized, semi-primitive motorized, and primitive. Maintaining a broad spectrum of these classes is very important to provide people with recreational activity choices.

Motorized use varies between seasons. When areas are not covered by sufficient snow levels for over-snow travel, motorized use is limited to the roads and trails shown on the Motor Vehicle Use Maps, also known as MVUMs. When sufficient snow cover exists, portions of the forest are opened to over-the-snow travel, by vehicles with tracks or skis. To manage recreation-use in these varying conditions, a summer and winter version of the ROS are included in this plan.

Maps of both the summer and winter recreation opportunity spectrum are displayed in Appendix A. There are no areas classified as Urban on the forest.

Rural and Roaded Natural Classes

Most of the developed recreational sites on the forest are found in one of these two classes. Vehicle-accessible developed campgrounds, day-use sites, reservoir fishing sites, and dispersed campsites that have been used by local families and regional visitors for generations are all categorized in one of these two classes. Opportunities for vehicle-based sight-seeing, including interpretive sites that highlight the cultural and scenic resources of the forest, are present. Corridors of these classes surround the Huntington and Eccles Canyons National Scenic Byway and the six Scenic Backways: Chicken Creek Road, Skyline Drive, Ferron-Mayfield Road, La Sal Mountain Loop Road, Elk Ridge, and Abajo Loop Road. All of these provide extraordinary panoramas of mountains and canyons accented by lakes, red rock spires, wildflowers, fall colors, and pastoral settings. The Manti-La Sal NF has small areas of Rural Class, for instance, at the mostly highly developed campgrounds on the forest, such as Joes Valley and Devil's Canyon; the bulk of this lumped category occurs as Roaded Natural.

Semi-primitive Motorized Class

This class is often found adjacent to, and is accessed by way of, Rural and Roaded Natural road corridors. Activities in this class are often family-based dispersed camping and motorized use. While motorized use is emphasized in this class, there are inclusions of nonmotorized areas. Vehicle-based sight-seeing, dispersed camping, hunting, fishing, and winter snowmobiling are popular activities in areas classified as Semi-primitive Motorized. Key areas include the Arapeen and Abajo trail systems, as well as favorite roads such as Skyline Drive, Geyser Pass, and La Sal Pass.

Semi-primitive Nonmotorized and Primitive Classes

These classes account for the largest amount of nonmotorized recreation opportunities, such as hiking, horseback riding, mountain biking, fishing, hunting, and climbing on the Manti-La Sal NF. This setting emphasizes nonmotorized use but may have some motorized inclusions. Opportunities for solitude and challenge are emphasized in these classes. Primitive dispersed camping is common, and the scenery

generally appears intact and unaltered by human activity. Ecological processes such as fire, insects, and disease are the primary factors affecting landscape patterns. Sounds of motorized use are generally not heard in the core of these areas. These classes include the Dark Canyon Wilderness, Nelson Mountain Wilderness, and areas such as Hammond and Arch Canyons, Fish Creek, and Candland Mountain.

Desired Conditions (FW-ROS-DC)

- 01** Recreation opportunities are available across a variety of settings that foster quality, year-round developed and dispersed experiences, as well as motorized and nonmotorized opportunities as described by the desired recreation opportunity spectrum. Desired recreation opportunity spectrum (ROS) settings for both summer and winter serve as the desired conditions for recreation. These settings reflect the integration of other resource values in a sustainable manner with the desired recreation opportunities, access, facilities, and infrastructure provided within those settings.
- 02** The type and level of infrastructure, visitor services, and information are sustainable and consistent with the desired recreation opportunity spectrum settings.
- 03** Developed sites are located within the Roaded Natural setting. These sites not only attract visitors but meet applicable maintenance standards and are fiscally sustainable.
- 04** Dispersed campsites along Roaded Natural corridors that exhibit high resource impacts or conflicts with other uses are identified and mitigation actions are implemented to minimize the impacts and/or reduce conflict.

Objectives (FW-ROS-OB)

- 01** Inventory all dispersed sites along Roaded Natural recreation opportunity spectrum corridors over the life of the plan.
- 02** Within five years of plan approval, designate dispersed camping sites along the following Roaded Natural corridors: on the Moab District: La Sal Loop Road; on the Monticello District: Harts Draw Road #0049, Causeway Road #0095, and North Indian Creek Road #0079; on the Sanpete District: Lake Fork Canyon Road #50070; and on Price/Ferron District: Cottonwood Creek Road #040.

Standards (FW-ROS-ST)

- 01** New system roads and motorized trails shall only be located within the Rural, Roaded Natural, and Semi-primitive Motorized classes unless they are replacements in kind of existing system roads or motorized trails to address resource impacts.
- 02** Existing roads and motorized trails in Primitive and Semi-Primitive Non-Motorized recreation opportunity spectrum classes shall be considered for closure during travel planning.

Guidelines (FW-ROS-GD)

- 01** To sustain recreation settings and opportunities, all project-level decisions and implementation activities, including management activities at developed and dispersed recreation sites, should be moving toward the desired recreation opportunity spectrum mapped classes.
- 02** To protect archaeological sites from increased visitation, on-the-ground interpretive signage should be located along Roaded Natural and Semi-Primitive Motorized road corridors unless necessary to mitigate damage from recreational use or in response to a tribal request. In those cases, signs should be located away from archaeological sites.

Winter Recreation and Access

Description and Values

Winter recreation opportunities are diverse and highly valued across the forest; they include a wide variety of motorized and non-motorized opportunities.

The more open and rolling terrain of the Ferron, Price, and Sanpete Ranger Districts provides an ideal landscape for motorized, over-snow travel, including snowmobiling and snow-biking. Several areas are groomed for snowmobiling. The area known as the Big Drift is a well-known and popular snow-kiting area. Non-motorized use occurs throughout the area in the form of cross-country and backcountry skiing and snowshoeing.

The high peaks of the La Sal Mountains provide scenic opportunities for backcountry skiing, which is becoming more popular every year. An agreement between the forest and local counties keeps the Geyser Pass Road plowed to the Geyser Pass Winter Trailhead throughout the winter. The winter trailhead provides access to the groomed La Sal Nordic trails and snowshoeing, backcountry skiing, and snowmobiling opportunities.

The Abajo Mountains also provide opportunities for backcountry skiing, cross-country skiing, and snowmobiling. The primary access is from the Harts Draw Winter Trailhead; volunteers groom a cross-country trail system from the trailhead.

The Utah Avalanche Center provides avalanche forecasts and education across the forest.

Several permitted outfitter and guides provide winter recreation opportunities for overnight stays in huts and yurts and guided backcountry skiing on the Moab and Monticello Districts of the forest as well.

Desired Conditions (FW-WINTER-DC)

- 01 High-quality, motorized winter recreation opportunities are provided, including winter-use parking in high-use areas. Where designated, non-motorized winter recreation areas provide for quiet winter recreation opportunities.

Guidelines (FW-WINTER-GD)

- 01 To provide distinct recreation opportunities when adequate snow is on the ground, all project-level decisions and implementation activities – including management activities at developed and dispersed recreation sites – should move toward the desired winter recreation opportunity spectrum mapped classes; these classes should be applied instead of the summer recreation opportunity mapped classes.
- 02 To manage for and provide a diversity of winter recreation opportunities, motorized, over-snow travel is not suitable in Primitive and Semi-primitive non-motorized recreation opportunity spectrum classes except for emergencies or administrative uses. New motorized facilities and infrastructure should not be developed in those classes.
- 03 To provide for winter recreation opportunities, winter trailheads and winter trail grooming should be completed annually in coordination with state, county, and municipal governments, as well as volunteer groups.

Recreation Special Uses

Description and Values

Recreation special use authorizations are issued for individuals or other entities to conduct activities on National Forest System (NFS) lands that are considered commercial, competitive, or beyond normal day-to-day uses of the forest. Recreation special use permits are currently issued for recreation events, outfitting and guiding and noncommercial groups use.

The diversity of landscapes and terrain available on the Manti-La Sal National Forest offers an equally diverse spectrum of recreation opportunities. Some of these opportunities require specialized skills and knowledge to ensure a safe and enjoyable experience. Outfitting and guiding services are becoming ever more appealing to current forest visitors who seek a richer, more specialized experience on the forest, but are constrained by time. Public demand for guided recreation activities and interest in new business opportunities to boost economies around the Manti-La Sal NF are increasing the number of outfitting and guiding proposals received by the forest, both from new proponents and existing permittees.

The Manti-La Sal NF has one of the largest recreation special use programs in the Intermountain Region, focused primarily on the high level of tourism in the greater Moab area. These permits cover a wide range of uses, including large-scale commercial bike and foot races, shuttle companies, hunting guides, climbing, ski huts, ATV tours, backpacking, and mountain biking. These businesses and events add to the local economies and provide opportunities that would not otherwise be available to sections of the public. Permitted outfitter and guides, recreation event organizers, and other recreation special uses permit holders are seen as partners in achieving management goals on the forest.

Desired Conditions (FW-RECSUP-DC)

- 01 Recreation special use permits are administered to standard and are issued consistent with the forest's current Special Use Permitting Process and Needs Assessment documents.

Objectives (FW-RECSUP-OB)

- 01 At least twenty percent of permits will be inspected annually.

Standards (FW-RECSUP-ST)

- 01 Permits for outfitting and guiding in alpine areas shall not authorize overnight use or the building of campfires.
- 02 Permits for permitted outfitting and guiding in alpine areas shall include stipulations to pack out all solid human waste, to urinate on rocks and not on vegetation, and to travel on trails or bare rocks.

Guidelines (FW-RECSUP-GD)

- 01 To reduce user conflicts, restrictions on all permitted recreation special uses should be applied when these conflicts are identified.
- 02 To reduce conflict, crowding, and resource impacts due to heavy concentrated use, special use permits for recreation events should not be issued on the opening of the primary hunting seasons – such as general deer and elk – and during summer holiday weekends – including, but not limited to Memorial Day, July 4th, Pioneer Day, on July 24th, and Labor Day.

Goals (FW-RECSUP-GL)

- 01 The forest views permittees as partners who educate and inform their clientele about applicable regulations and policies, as well as how to care for and value forest resources.

Access

See Also

Tribal Engagement, Recreation and Access, Recreation Opportunity Spectrum, Wilderness Areas, Bears Ears National Monument, National Scenic Byways, National Recreation Trails, and Recommended Wilderness.

Description and Values

Access to the Manti-La Sal NF is facilitated by a transportation system that includes roads, as well as motorized and non-motorized trails. The road and trail systems include not only the travel way tread, but all other associated constructed features such as bridges, ditches, culverts, signs, and retaining walls, which support users and minimize the effects to other resources and values. The transportation system is important not only for recreational access, but for a broad suite of resource needs, such as livestock grazing, mineral extraction, timber harvests, vegetation management, access to water infrastructure, and fire suppression. For many forest visitors, the road system is the primary way they experience the forest; and an even greater number of visitors interact with the forest only through the road and trail systems.

While the transportation system facilitates management of, and access to, the forest, it can also have undesirable impacts on other resources, including, but not limited to, increased erosion, disrupted habitat connectivity, sediment accumulation in waterways, and reduction in areas of quiet and solitude. Approximately 2,300 miles of Manti-La Sal NF roads are open at least part of the year to motorized vehicles, which allow visitors to drive to portions of the forest and operate over-snow vehicles in the winter months. There are about 1,100 miles of authorized trails accessible for motorized and non-motorized recreation as well as quiet winter access.

Motorized trail opportunities include a mix of single track, 50 inches or less, and 66 inches or less routes. Demand for additional motorized trails persists, including for trails that can accommodate wider vehicles, as well as over-snow opportunities. Demand for non-motorized opportunities to accommodate an evolving suite of technologies and activities is also present, as population and public diversity also increases. Non-motorized trails include those designed for hikers, equestrians, mountain bikers, and Nordic skiers.

Travel management on NFS lands is directed by the 2005 Travel Management Rule. The rule requires designation of roads, trails, and areas that are open to motor vehicle use and prohibits motorized use off the designated system. Travel management planning, though separate from forest planning, identifies the transportation system that provides appropriate access to public land needed for multiple uses, resource management, public recreation, administrative, and special use of NFS lands. Forest roads connect to local, state, and interstate transportation systems. They provide vital conduits for the economy, while ensuring that biodiversity, wildlife habitat conditions, a diverse range of recreation opportunities, and overall landscape condition and function are maintained or improved.

Road and trail maintenance funding has decreased on the forest for the past 15 years. At the same time, local populations have grown and demands for access to the forest have increased. Over time, routine maintenance has been reduced, maintenance cycles extended, and selective repairs made. Serious public safety and resource damage concerns are a possibility because of increased demand and decreased funding.

Desired Conditions (FW-ACCESS-DC)

- 01 The road system serves land management and public needs and purposes. It is interconnected with federal, state, and local public roads to provide access to lands, infrastructure, other land ownerships, and inholdings, where appropriate.
- 02 The system of roads and trails is well-marked, protects natural and cultural resources, promotes safety, and minimizes conflict among various user groups, while accommodating appropriate access to the forest.
- 03 The system is financially, ecologically, and socially sustainable for the forest, while contributing to the social, cultural, and economic needs of local communities.
- 04 The designated system of trails provides both motorized and non-motorized opportunities for summer and winter recreation, with minimal conflict between modes of travel.
- 05 Easements necessary to provide for public and administrative access are acquired and maintained.
- 06 Road and motorized trail use do not impact wildlife winter range and quiet winter recreation opportunities.
- 07 The forest offers a mix of motorized uses – including single-track, 50-inch, 60-inch, 66-inch, and full-sized vehicle trails – provides opportunities for a diversity of users and vehicle types, as well as different levels of challenge in a variety of terrain and conditions.
- 08 Roads and trails are generally not used when soils are saturated, thus preventing damage to the travel way, associated features, and other resources.
- 09 Unauthorized motorized routes (i.e., that are not on the motor vehicle use map or under permit) do not exist on the forest.

Objectives (FW-ACCESS-OB)

- 01 Maintain 50 percent of the forest passenger car system to standard annually.
- 02 Within ten years of plan approval, identify where easements are needed to maintain public access and prioritize acquisition of these easements.
- 03 Each year, maintain to standard a minimum of 100 miles of non-motorized trail and 80 miles of motorized trail.
- 04 Assess and monitor visitor use and satisfaction on existing and emerging high-use trails every five years to address other non-motorized trail use conflict.
- 05 Plan and coordinate maintenance and monitoring of roads and trails with local governments, partners, and volunteers annually.

Standards (FW-ACCESS-ST)

- 01 Administrative level 1 roads are not authorized for use by the public, except where they are dual designated as motorized trails.
- 02 Gates or other barriers shall be installed to manage use of administrative level 1 roads.
- 03 Mechanized travel is not authorized except on roads and trails designated for their use. Cross-country mechanized use is not authorized.

- 04 Open roads and trails shall be maintained and signed to standards.

Guidelines (FW-ACCESS-GD)

- 01 To prevent concentrated water from directly entering streams, road and trail construction, reconstruction, and maintenance activities – including for temporary roads and skid trails – should be hydrologically disconnected from delivering water, sediment, and pollutants to water bodies, except at designated stream crossings.
- 02 To maintain the ecological health of riparian areas, new roads and trails should be located outside of riparian areas and should only cross them in sustainable locations.
- 03 To avoid impacts to aquatic and wildlife species, road maintenance and new road construction should minimize adverse effects to their movement and habitat.
- 04 To ensure closed roads and trails remain closed, closure devices should be maintained.
- 05 To protect the ecological integrity of the forest, as well as the safety of the public, motorized routes not on the system should be closed unless motorized use is authorized under permit.
- 06 To provide off-highway vehicle recreation opportunities other than those provided on roads, motorized off-highway vehicle trails should be built no wider than 66 inches, unless greater widths are necessary to mitigate other resource impacts or provide for user safety.
- 07 To protect wildlife winter range and opportunities for quiet winter recreation, seasonal motorized use area closures should be employed.
- 08 To maintain the ecological health of riparian areas, appropriate mitigation measures should be used for existing roads and trails in riparian management zones that are negatively impacting aquatic resources; such measures include hardening, rerouting, or closing.
- 09 To maintain a sustainable motorized route system that has minimal effects on wildlife populations, route densities should remain at or below levels that affect the movements of big game animals, as determined by best available science.

Goal (FW-ACCESS-GL)

- 01 Expand partnerships and agreements with local governments, partners, and volunteers for shared maintenance and monitoring of roads and trails.
- 02 When planning, evaluating, and managing the Manti-La Sal NF trail system, consider linking routes into cohesive and connected trail networks through collaboration with local, state, federal, and tribal governments.
- 03 New motorized and non-motorized trails are developed and maintained with municipalities, counties, states, and other federal agencies and partners to allow for shared maintenance and connectivity.

Education, Interpretation and Volunteerism

See Also

Tribal Engagement, Recreation and Access, Wilderness Areas, Bears Ears National Monument National Scenic Byways, and National Recreation Trails.

Description and Values

The Manti-La Sal National Forest offers opportunities to connect people to their environment and to the natural and cultural history of the forest. These connections provide opportunities for the development of strong stewardship ethics in the form of personally delivered programs, brochures and booklets, and interpretive wayside exhibits using digital and other formats. These all contribute to offering an appreciation for natural and cultural history. Other organizations and partners have opportunities to join the Manti-La Sal NF in achieving mutual goals for education and interpretation. A variety of summer and winter opportunities are also offered for the public to learn how to enjoy the national forest safely and be good stewards; these include programs offered by the Utah Avalanche Center, the Fishing Derbies, and other programs offered about fire safety and cultural resources.

Desired Conditions (FW-EDUC-DC)

- 01** Interpretation and education products enhance visitors' understanding and appreciation for the rich natural, and cultural resources of the forest and build support for public lands.
- 02** Visitor information is readily available in a variety of forums and kept up-to-date so that the public may be informed and educated using modern technology, prior to visiting, about current Forest Service-related policies, activities, services, and issues.
- 03** Education about forest stewardship and responsible use, leads to better visitor compliance with regulations.
- 04** All educational or informational materials promote principles relating to watersheds and their relationship to community water sources.

Goals (FW-EDUC-GL)

- 01** Establish new, and maintain existing, partnerships and volunteer opportunities to assist in the delivery of public information, natural and historic interpretation, conservation education, and stewardship services.
- 02** Develop and maintain volunteer programs, partnerships, and conservation education opportunities to engage the public in the stewardship of natural and cultural resources.
- 03** Develop partnerships with Tribal nations to provide opportunities for Tribal youth to participate in, and learn about, land management.

Scenery Management

See Also

Recreation and Access, Facilities Management, and Land Ownership and Special Uses.

Description and Values

Most visitors to the Manti-La Sal National Forest value and enjoy and value the cultural landscapes and scenic character that the forest provides them. Whether a visitor is recreating or working, the view of the surrounding landscape is often an important part of their experience. The scenery of the Manti-La Sal NF is a regional driver for tourism, recreation, and the economy, as well as the growth of nearby communities. Scenery is enhanced or maintained to have resilience to changing conditions, while supporting ecological, social, and economic sustainability on the forest and surrounding landscapes.

The La Sal and Abajo Mountains – which are unique, high-elevation island ecosystems surrounded by vast desert landscapes – serve as a highly valued scenic backdrop for Arches and Canyonlands National

Parks. The La Sal Mountains also provide stunning views of the surrounding red rocks of Moab and Castle Valley, Utah. Impressive scenes from the Abajo Mountains include views of Monument Valley, Canyonlands National Park, and mountain ranges in the surrounding states of Colorado, New Mexico, and Arizona, as well as north to the La Sal Mountains. Dark Canyon Wilderness is characterized by deep sandstone canyons with spectacular vertical walls and soaring cliffs. In addition to this stunning natural scenery, Dark Canyon Wilderness is one of only a few designated wilderness areas with significant visible pueblo, tribe, and nation archaeology.

The Wasatch Plateau and San Pitch Mountains frame the Sanpete Valley to the east and west, respectively; in the Castle Valley area, extending from Price to Emery, the Wasatch Plateau creates what Edward Geary called, in his book of the same name, the “proper edge of the sky.” Views from the plateau are particularly expansive on clear days, when views of Mount Nebo and Mount Timpanogos to the northwest and the La Sal Mountains to the southeast are stunning. Steep canyons are incised into the flanks of the plateau, dropping precipitously to the Sanpete Valley and more gradually to the Castle Valley, 4000 feet below.

Although a variety of landscapes may be visually pleasing, the Scenery Management System establishes a comprehensive, science-based framework to determine and describe scenic character, as well as manage to maintain it. Scenic character descriptions not only describe the physical and biological features of the landscape, but also the cultural features and natural disturbances, like fire on a landscape.

Scenic integrity objectives, along with scenic character descriptions, are developed following the Scenery Management System handbook direction. Scenic integrity objectives are a measure of the degree to which a landscape is visually perceived to be complete when compared to the scenic character of an area. Scenic integrity objectives have been assigned to all Manti-La Sal NF lands to guide the design and implementation of land management activities to meet desired thresholds of allowable visual dominance from landscape modifications. Projects are designed to meet the scenic integrity objectives of: high, moderate, low, or very low, as viewed in the foreground, middleground, and background from identified critical viewing platforms such as travelways and viewpoints. The one exception to this is where a scenic integrity objective of ‘very high’ has been assigned, in these areas a project should be designed to meet ‘very high’ viewed from anywhere, including from the air. Projects that are not visible from any identified critical viewing platforms (for instance, due to topography that obstructs views) do not need design measures to meet the areas’ assigned scenic integrity objectives. Appendix A includes the scenic integrity objective maps.

Desired Conditions (FW-SCENERY-DC)

- 01** The forest contains a variety of ecologically-sound, resilient, and visually appealing forest landscapes that sustain scenic character in ways that contribute to visitors’ sense of place; connection with nature; and local communities’ and pueblos, tribes, nations’ traditional values.
- 02** The scenic character of the Manti-La Sal NF is characterized by a predominately natural-appearing landscape of high plateaus, island mountain ranges, broad sandstone canyons, and multiple overlapping cultural landscapes.
- 03** High-quality scenery is protected in areas the public values for scenery, such as scenic byways, major roads and trails, designated wilderness areas, recommended wilderness, inventoried roadless areas, developed recreation sites, and geographic areas with scenic values.
- 04** Scenery is enhanced or maintained to have long-term resilience to changing conditions, while supporting ecological, social, and economic sustainability in the forest and the surrounding landscapes.

- 05 The forest's scenic character contributes to the quality of life of local communities and visitors, while reflecting a range of allowable alterations that balance social and economic values, ecosystem health, landscape dynamics, resilient landscapes, and sustainability.
- 06 The La Sal, Abajo, and Elk Ridge landscapes continue to be valued as scenic backgrounds to the surrounding National Parks and Monuments, in addition to their value in nearer viewsheds.
- 07 High-quality dark skies are present and valued across the forest.
- 08 Scenery management inventory information is available and provided to local adjacent and neighboring land management agencies for integration into projects and plans.
- 09 Built environment elements across the forest reflect the architectural character of the area and blend with natural settings to remain an integrated part of the cultural and scenic landscape.

Standards (FW-SCENERY-ST)

- 01 Scenic integrity objectives shall be the desired conditions for scenery management and shall be integrated into the design, planning, and implementation of all resource management decisions.

Guidelines (FW-SCENERY-GD)

- 01 To achieve or move towards achieving scenic integrity objectives, constructed features, facilities, and management activities should blend with the natural-appearing landscape. The concepts of form, line, color, texture, and pattern common to the scenic character being viewed should be applied during project planning and design.
- 02 To minimize visual disturbances to the forest landscape, management activities should be consistent with, or move the area toward, achieving scenic integrity objectives (as defined by the Scenic Integrity Objective map).
- 03 To maintain or enhance the scenic character of the forest, management activities that result in short-term impacts inconsistent with the assigned scenic integrity objectives should achieve the scenic integrity objectives over the long-term. Short-term and long-term timeframes should be defined during site-specific project planning.
- 04 To maintain the scenic character in or along areas valued highly by the public for scenery, as defined by concern level 1 travelways and use areas in the Scenery Management System, efforts should be made to minimize high-intensity fire, unless necessary to meet management objectives or ensure public safety.
- 05 To meet or exceed the scenic integrity objectives and maintain the scenic character of an area, vegetation management activities should be designed to reflect natural disturbance regimes and processes.
- 06 To recognize the scenic value of the forest from locations outside of the forest, assess and incorporate viewshed analysis from viewing platforms beyond the forest boundary, especially where the forest is adjacent to other land ownerships and may serve as the dominant background view from these adjacent lands.
- 07 To ensure consistency with the scenic character of the forest and with the cultural landscapes of the area, construction, or reconstruction of facilities – including, but not limited to, those for recreation and administration, as well as any special use permitted facilities – should be consistent with both the assigned scenic integrity objectives and the Built Environment Image Guide.

- 08 To maintain or enhance the ecological, cultural, and social values of dark skies, the design of all new facilities should include measures to reduce light emissions and pollution.
- 09 To connect the forest to local communities, Nations, Tribes, and Pueblos, vistas and viewsheds should be used as interpretive opportunities.

Goals (FW-SCENERY-GL)

- 01 Adjacent federal, state, and local public land agencies participate in planning and implementing projects where the viewshed includes these adjacent lands.
- 02 Protect scenic character on and adjacent to the national forest, including along scenic byways, by partnering with other entities, such as the Utah Department of Transportation, Tribal and local governments, and commercial and private entities.
- 03 where non-federal projects occur on federal lands, work with partners, permittees, owners, and developers to achieve assigned scenic integrity objectives.

Facilities Management

See Also

Cultural and Heritage Resources.

Description and Values

Manti-La Sal National Forest personnel manage a variety of facilities, both buildings and non-transportation system structures. This classification includes administrative facilities such as offices, warehouses, employee housing, and fire facilities, as well as repeater sites, and communication towers. These facilities serve a variety of purposes and enable the Forest Service to fulfill its mission. There are 27 Forest-owned facilities, specifically 7 guard stations, 6 non-office buildings, 4 district offices, and 10 repeater and communication sites.

Desired Conditions (FW-FACILITY-DC)

- 01 All facilities are safe, clean, and structurally sound; energy- and cost-efficient; accessible to persons with disabilities; and meet the needs of forest personnel.
- 02 Facilities eligible for the National Register of Historic Places are available for forest administration, public recreation, and interpretation, as well as other uses where possible and appropriate.
- 03 Facilities are managed to the current Facility Master Plan and
- 04 Facilities are repurposed or decommissioned when the forest's needs change.

Standards (FW-FACILITY-ST)

- 01 Facilities that are listed on, or are eligible for, the National Register of Historic Places shall be managed in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

Guidelines (FW-FACILITY-GD)

- 01 To minimize maintenance backlog and infrastructure deterioration and to protect public safety and health, facilities no longer used as intended should be repurposed to accommodate a new use or be decommissioned.

- 02** To improve energy efficiency, reduce costs, conserve natural resources, improve functionality, improve accessibility, and ensure consistency with both the Built Environment Image Guide and the site's scenic character, facility design, maintenance, and renovation should incorporate emerging technologies and sustainable concepts.
- 03** To protect ecological, cultural, and social resources, modifications or additions to facilities should avoid wetlands, seeps, springs, riparian areas, stream bottoms, and areas of cultural significance.
- 04** To best meet forest management needs, new administrative facilities should be built using the smallest feasible environmental footprint, the Built Environment Image Guide, and assigned recreation opportunity spectrum class and scenic integrity objective.

Land Ownership and Special Uses

See Also

Scenery Management, and Recreation and Access.

Description and Values

The primary functions of the forest lands program are land survey and boundary management, land adjustments, and lands special uses. Surveying National Forest boundaries, maintaining posted property lines, and defending public lands from trespass or encroachment are activities that maintain the integrity of the National Forest System (NFS). It is important to retain in public ownership all lands currently under the forest's administration that meet the long-term vision and value of maintaining the integrity of contiguous natural ecosystems, riparian areas and wetland ecosystems, recreation and scenery opportunities, clean air and water, and habitat for plant and animal populations. Through the methods available to the agency, the Manti-La Sal National Forest values acquisition, conveyance, and exchange of lands or mineral estates to enhance this vision. Lands or mineral estates that do not meet the envisioned needs could be considered for disposal. In all cases, the primary guiding principle would be the public benefit.

Desired Conditions (FW-LAND-DC)

- 01** Private land ownership within the administrative boundary of the Manti-La Sal National Forest is consolidated to improve management of NFS lands, reduces wildlife-human conflicts, provides for ecological connectivity, and improves access to public lands.
- 02** National Forest System land boundaries are posted, thereby reducing the potential for trespass and encroachment.
- 03** Road and trail easements or rights-of way provide adequate administrative access and reasonable public access to NFS lands.
- 04** Authorized roads, utilities, and communications sites and corridors have minimal impacts on natural resources.
- 05** All Forest Service interests in real property, including conservation easements and water rights, are maintained.
- 06** Vegetation within energy corridors is managed to allow for effective maintenance and operation of associated infrastructure, while retaining natural ecological characteristics.

- 07** Environmental, visual, and auditory impacts of emerging technologies, communication sites, utility corridors, and other authorized infrastructure are minimized and are in harmony with the surrounding landscape.
- 08** Special use authorizations are responsive to demands for commercial or other use of NFS lands, while protecting sensitive ecological resources and maintaining multiple uses.
- 09** The special-use authorization process is timely, efficient, user-friendly, and consistent across similar landscapes and uses.
- 10** Energy corridors throughout the forest improve the delivery of electricity, oil, and gas, and enhance the western electric transmission grid by improving reliability, reducing congestion, and contributing to the national electrical grid.
- 11** Special-use authorizations include, but are not limited to, recreation residences, isolated cabins, historic leases, and resorts. These authorizations provide unique opportunities, services, and experiences for the recreating public and address a demonstrated demand for a specific recreation opportunity.

Standards (FW-LAND-ST)

- 01** To provide public and administrative access to NFS lands, land adjustment proposals shall consider reciprocal right-of-way acquisitions when feasible.
- 02** Land ownership adjustments shall only be considered if they improve management of NFS lands by consolidating land ownership, providing public access to public lands, or protecting and enhancing resources.
- 03** Authorizations for utilities that require use of roads not listed on the motor-vehicle use maps must incorporate requirements for road construction, reconstruction, and maintenance.

Lands Special Uses

See Also

Minerals and Energy Resources.

Description and Values

Lands special use authorizations authorize the occupancy and use of NFS lands by private individuals, organizations, or companies for a wide variety of uses. Such uses include roads, dams, water systems, utility corridors, communications, commercial filming, still photography, and other private or commercial uses that cannot be reasonably accommodated off of NFS lands and that conform to management direction for the area.

Proposals for occupancy and use of National Forest System lands must pass a two-level screening process to determine if the proposed use is consistent with Forest Service policy before it can be accepted as a formal application.

Applications that have passed the screening criteria are subject to environmental analysis, review, and monitoring. All authorized uses on NFS lands are required by law to meet applicable environmental protection measures.

Desired Conditions (FW-LANDSUP-DC)

- 01 Emerging technologies, communication sites, energy corridors, and other permitted infrastructure are co-located to the extent possible, to minimize environmental and scenic impacts.
- 02 Opportunities are available for a wide variety of lands special uses. These uses include, but are not limited to, communications, roads, dams, water systems, utilities, energy transmission rights-of-way, and other public or private services on lands that are suitable for these activities and that cannot be reasonably accommodated off of National Forest System lands.
- 03 Utility corridors and communication sites meet safety standards and permittee needs as well as resource considerations.
- 04 Service roads accessing permitted infrastructure are gated to reduce the likelihood of vandalism and to minimize the development of unauthorized routes on National Forest System Lands.
- 05 Unauthorized private improvements do not occur on the forest.
- 06 Obsolete, unused, and expired permitted infrastructure is not present on the landscape.
- 07 Permittees are accountable to maintain their access roads and comply with the terms and conditions of the authorization.

Objectives (FW-LANDSUP-OB)

- 01 Complete permit inspections on at least 20 percent of existing authorizations annually.
- 02 Map all issued authorizations and make them available electronically within the life of the plan.
- 03 Create a digitized special use authorization filing system within 10 years of plan approval.

Standards (FW-LANDSUP-ST)

- 01 Access routes for authorized uses shall be established when authorization is proposed, or at time of renewal.
- 02 Vegetation management actions within utility corridors and along linear transmission facilities shall meet facility safety requirements, control invasive species, and reduce fire hazards. Revegetation will meet assigned scenic integrity objectives within and adjacent to the corridor.
- 03 Utility corridors and communication sites shall use existing facilities, sites, and corridors unless new sites can provide better social, economic, and ecological benefits.
- 04 The authorized officer shall reject all proposals for isolated private cabins and shall not reissue permits for existing cabins once the existing permit expires.
- 05 Proposals for development of recreation residences on new summer home tracts or on existing vacant lots shall not be accepted, excepting in-lieu lot selections as allowed in FS regulations and directives.
- 06 All communication sites shall have an approved communication site management plan.
- 07 All authorizations should have an operation and maintenance plan that addresses health, safety, resource protection, and operating procedures.
- 08 A single road use authorization shall be issued for each contiguous private inholding. In instances where a single private inholding has multiple owners or is subdivided, the authorized officer shall

require all landowners to form a road users or homeowners association and issue the authorization to that entity only.

- 09 Authorizations for access to private land may only be granted when access cannot reasonably be accomplished without the use of NFS land. Reasonable to the agency shall not consider the legal, logistical, or fiscal impacts to the private landowner(s). Permits shall be the primary instrument for authorizing NFS land for private access uses. Easements may only be issued when there is a willing landowner to provide reciprocal access across their private property for access to NFS land by the public which could not otherwise be accessed. All easements must be processed under the guidance of the Regional Office Land Ownership and Special Uses program staff.

Guidelines (FW-LANDSUP-GD)

- 01 To reduce long-term surface disturbance and impacts to scenic resources, new distribution lines and communication lines should be located underground or co-located within or adjacent to existing road corridors, unless it is not technically feasible to do so, or where installing the line overhead would reduce resource impacts.
- 02 To protect aquatic and riparian resources, special use authorizations should include conditions to avoid or minimize adverse effects to fish, water, and riparian resources. If adverse effects to inland native fish or desirable nonnative species, species of conservation concern, impaired water bodies, or stream habitat conditions are unavoidable, authorizations should require actions that result in reestablishment, restoration, mitigation, or improvement of conditions and processes to ensure that projects that degrade conditions also include measures to incrementally improve conditions.
- 03 To reduce effects to fish, water, and riparian resources, new hydropower support facilities should be located outside of riparian management zones. Bypass flows should be incorporated into the development of hydropower facilities to sustain favorable flows and aquatic species habitat.

Goals (FW-LANDSUP-GL)

- 01 The forest partners with private landowners, individuals, businesses, and corporations to meet applicants' needs while protecting public resources.

Minerals and Energy Resources

See Also

Land Ownership and Special Uses.

Description and Values

The energy resources found on the forest, including coal and natural gas, provide energy sources for Utah and the nation. Approximately 80 to 85 percent of the total annual coal production in Utah is from federal and state coal leases on the forest and production has exceeded 19 million tons yearly since 1994, with an annual return to the federal treasury of over \$30 million. Coal is shipped throughout the nation, with the majority fueling coal-fired power plants, which generate electric power for the western US. Historically, coal mining shaped the economy and demographic makeup of Carbon County and provided economic diversity to Emery and Sevier Counties. Coal mining continues to provide substantial contributions to the economies of those three counties.

Most mineral exploration on the forest is for nonrenewable energy and minerals, such as underground coal, oil, and natural gas. Lesser exploration occurs for locatable minerals, such as gypsum and uranium.

Commodity prices, which are dependent on both regional and global geopolitical issues, as well as supply and demand, are the principal factors that drive mineral exploration efforts.

Coal bed methane exploration is mostly outside the forest boundary in topographical lows within the stratigraphically-older Mancos Shale. Coal exploration on the northern portion of the forest is primarily associated with known coal reserves that are located on or near existing coal leases. Potash, a nonrenewable mineral, has been identified on the Moab District.

Salable minerals are generally low-value deposits and sources of sand, gravel, and stone suitable for building and construction materials and road surfacing. There are numerous sources of sand, gravel, boulders, and sandstone on all districts of the forest. There are sites developed for the purpose of being mineral sources, as well as numerous undeveloped sites scattered across the forest.

Locatable minerals found on the forest have previously included gypsum and birdseye marble on the Ferron, Price, and Sanpete Districts and gold, copper, uranium, and vanadium on the Moab and Monticello Districts. The last conventional uranium mill still operating in the US is located just outside Blanding, near the south end of the forest, but very little active uranium mining occurs on the forest today. However, past uranium and vanadium mining booms in Grand and San Juan Counties transformed southeastern Utah, expanding its cash-poor farming economy, and creating substantial benefits to household income, transportation, and communication. Dozens of small mines were established on the forest in the past, particularly during the 1950's era, Cold War mining boom.

Numerous abandoned mine sites are located on the Moab and Monticello Districts in both the Abajo and La Sal Mountains. These sites are comprised primarily of underground mines and prospects exploring uranium/vanadium deposits hosted in sedimentary rock formations. Many of the uranium mine and prospect adits remain open and accessible; consequently, they may pose a danger to the public and are of particular concern to Nations, Tribes, and Pueblos. Others have collapsed naturally or been permanently closed by state and federal agencies. Residual radioactivity associated with abandoned ore stockpiles and/or mine waste rock dumps also may pose a health risk to the public.

Desired Conditions (FW-MINERALS-DC)

- 01** Mineral and energy resources are developed in an environmentally-sound manner to meet societal needs, national security, and contribute to the local economy.
- 02** Abandoned mines are reclaimed in a safe, secure, culturally sensitive, and ecologically-sound manner.
- 03** Domestic mineral and energy resource needs are supported without compromising the long-term health and diversity of resources on the forest.

Objectives (FW-MINERALS-OB)

- 01** Over the life of the plan, evaluate a minimum of three abandoned mine land hazards that pose a risk to public health and safety.

Standards (FW-MINERALS-ST)

- 01** Groundwater and surface water flow that is potentially influenced by mineral and energy operations shall be regulated and monitored in accordance with regulations provided by the Utah Division of Water Rights.
- 02** Mineral and energy operations shall not be sited on or below unstable slopes.

- 03** Mineral and energy leases shall contain use and occupancy stipulations to minimize impacts on surface resources.
- 04** Consent to Bureau of Land Management coal resource leasing shall include stipulations to mitigate unacceptable surface impacts on forest lands and surface resources.
- 05** Abandoned mine lands and mine sites shall be reclaimed to be consistent with requirements of protection of eligible sites under the National Historic Preservation Act, meet or exceed assigned scenic integrity objectives, eliminate hazards, create stable site conditions, and ensure the long-term health of forest resources.
- 06** Subject to valid existing rights, minerals shall not be developed on segregated or withdrawn lands, where removal is prohibited by statute or order.
- 07** Consult Nations, Tribes, and Pueblos early in the planning process for the reclamation of abandoned mine lands and mine sites in order to conduct these projects in culturally sensitive ways.

Guidelines (FW-MINERALS-GD)

- 01** To return areas impacted by mining and energy development activities to pre-activity conditions, or as close as possible to pre-activity conditions, projects should be designed to provide comparable form and function, commensurate with site potential.
- 02** To maintain or improve bat populations, enhancement and protection measures should be used when mines are opened or closed.
- 03** To maintain ecological and aquatic system health, mineral and energy operations should not release sediment and pollutants into these systems. If avoidance is not possible, the level of release should be minimized.

Wildland Fire and Fuels Management

See Also

Coniferous Forest, Deciduous Forest, Woodlands, and Timber Management.

Description and Values

Wildland fire is a primary ecological process that has shaped and maintains forest and non-forest ecosystems, which in turn sustain native plant communities and wildlife species. Wildland fire on the landscape occurs due to unplanned and planned ignitions. This section provides guidance for the management of both types of wildland fire, as well as for fuels management activities to meet various desired conditions and objectives for fire and other resources. Fire management strives to balance the natural role of fire, while minimizing the adverse impacts on watershed health, wildlife habitat, high-valued resource assets, and air quality. The Manti-La Sal National Forest is a diverse forest with multiple vegetation types, each of which requires different wildland fire regimes to successfully retain a healthy composition and structure. Therefore, multiple fire regimes are desirable across the forest, each based on the vegetation type of the area.

Treatment of vegetation for fuels mitigation is typically conducted to control fire behavior, especially around high-valued resource assets and for firefighter and public safety. Fuels mitigation, as well as fire risk, crosses management boundaries and therefore a cohesive strategy for all lands must be considered as an integral part of managing the wildland fire resource. In some areas of the forest where there is a

higher concentration of high-valued resource assets, fuels reduction activities should protect the social, economic, and ecological values at risk from high-severity wildland fire effects.

Desired Conditions (FW-FIRE-DC)

- 01 Wildland fire occurs with minimal risk to loss of life, damage to property, and ecosystem function.
- 02 Wildland fire is an integral part of achieving ecological health and resilience, while incorporating economic and social considerations, including traditional uses of fire.
- 03 Fuels are at levels that maintain natural fire regimes, support ecological resilience, and minimize uncharacteristic wildland fire.
- 04 Wildland fires exhibit the appropriate range of severity and frequency, which are representative of historical fire disturbance regimes.
- 05 Where permanent infrastructure, communities, and other high-value resources exist on the landscape, fuel accumulations promote safe, effective wildland fire management opportunities.
- 06 All wildland fires are managed to achieve Forest Service desired conditions through risk-based strategies.

Objectives (FW-FIRE-OB)

- 01 Provide annual education and outreach opportunities to local communities and the visiting public about fire prevention, the ecological role of fire, and its short-term impacts.

Standards (FW-FIRE-ST)

- 01 Firefighter and public safety shall be prioritized in every fire management activity.
- 02 Information about smoke and possible impacts to human health and welfare shall be provided to the public during large, complex fires with likely long-term effects.

Guidelines (FW-FIRE-GD)

- 01 To minimize damage to natural resources, minimum impact suppression tactics should be utilized in sensitive areas, such as designated wilderness, recommended wilderness, research natural areas, riparian management zones, sensitive habitats of at-risk plant and at-risk animal species, cultural and historic sites. Exceptions to this guideline may occur when a more direct attack is needed to protect life or adjacent property or mitigate risks to responders.
- 02 To prevent the use of motorized vehicles off existing travel corridors, fire lines should be reclaimed to the greatest extent possible after a fire is extinguished.
- 03 To take advantage of the opportunity to use wildland fire to improve ecological conditions and make progress toward other desired conditions, when responding to unplanned ignitions, managers should use wildland fire to achieve management objectives for other resources where and when conditions permit, keeping risk within acceptable limits.
- 04 To support ecosystem maintenance and enhancement, fuels management actions should be designed based on the wildland fire severity of the vegetation type where the prescription will be applied.
- 05 To avoid expansion of invasive species and noxious weeds, mitigation measures should be developed in areas where there is a moderate to high risk of invasion. If adequate mitigations are

not available, or if they are cost-prohibitive, minimizing the burned area should occur, in alignment with protections and safety of firefighters and the public.

- 06** To manage across ownership boundaries where wildland fire has the potential to affect non-NFS lands, multi-agency wildland fire management decisions should include incident response planning that involves effective, efficient, risk-based wildland fire management decisions and includes or considers input from communities and multiple stakeholders.
- 07** To maximize firefighter safety, hazard trees should be removed where firefighters are working near structures, administration sites, permitted infrastructure, and along primary travel corridors.
- 08** To provide protection of highly valued resources and assets and firefighter and public safety, in areas where critical values are directly at risk of wildland fire, fuel management actions should reduce fire behavior to allow for safe and efficient response up to 90th percentile weather conditions. Project-level analysis may refine the management action through analysis of tradeoffs, risks, and benefits.
- 09** To support local communities – including, but not limited to Nations, Tribes, and Pueblos – remove and make available fuelwood and other products for traditional use before conducting prescribed burning.
- 10** To reduce risk to cultural resources, in fire-vulnerable cultural sites and areas of tribal importance, hand-based fuels reduction shall occur ahead of all prescribed-burning projects.

Goals (FW-FIRE-GL)

- 01** Where possible, all wildland fires are managed to help achieve objectives relevant to adjacent land managers.
- 02** Implement a coordinated risk management approach with adjacent land managers to promote landscapes that are resilient to fire-related disturbances and to prepare and execute a safe, effective, and efficient response to fire. Opportunities to achieve mutual objectives are identified and accomplished through collaborative planning.
- 03** Work and engage with adjacent communities – including Nations, Tribes, and Pueblos – to provide education about wildland fire risk, wildland fire as an essential ecological process, factors that can reduce wildland fire risk, and how to create fire-adapted and fire-resilient communities that are less reliant on aggressive wildland fire suppression.
- 04** Work with communities and stakeholders to develop or update community wildland fire protection plans, assessments, and management plans that identify and prioritize areas for management action.
- 05** Promote collaboration with private industry and outside interests to increase the percentage of fire-resilient landscapes across the forest, emphasizing areas with dense high values at risk.

Livestock Grazing and Range Management

See Also

Vegetation Communities and Resources, Wildlife, Watershed and Aquatic Resources, and National Scenic Byways.

Description and Values

Livestock grazing has been an important part of the local culture and economies of communities surrounding the Manti-La Sal National Forest for over a century; and it continues to play an important cultural and economic role in these areas today. Recent economic reports show domestic livestock grazing on forest and adjacent lands contribute to the stability of the agricultural sector of the local economies through direct output, jobs, and tax benefits. Grazing is recognized for its ecological contributions and economic benefits, including food, fiber, fine-fuels reduction, improved water distribution for wildlife, and maintenance of open spaces.

Grazing systems and practices are designed to support terrestrial and riparian vegetation, soils, socioeconomics, and other resource plan components. Livestock management incorporates science and ecological conditions to inform decisions and react to changing conditions, such as drought, fire, variability of forage, and other ecological, social, and economic factors. Allotment management plans for livestock provide specific operational guidance and are the appropriate planning level to develop and implement management tools such as utilization guidelines or stream bank alteration protocol.

Desired Conditions (FW-RANGE-DC)

- 01 Sustainable levels of livestock grazing and associated management activities are compatible with ecological functions and processes.
- 02 Livestock grazing supports local rural communities, the agricultural economy, and local employment.
- 03 Range infrastructure and improvements function to maintain or improve livestock management and the condition of forest ecological and cultural resources, while minimizing conflicts.

Objectives (FW-RANGE-OB)

- 01 Evaluate a minimum of 6 allotments for changed conditions over the life of the plan.
- 02 Every 5 years, treat a minimum of 1,000 acres of non-forested rangeland communities to maintain or enhance the herbaceous understory for livestock and wildlife forage.
- 03 Annual remove, improve, reconstruct, or construct a minimum of 6 existing livestock water developments, such as ponds, stream diversions, and spring developments.
- 04 Over the life of the plan, update or develop allotment management plans for all allotments that do not currently have a site-specific National Environmental Policy Act decision.

Standards (FW-RANGE-ST)

- 01 Livestock management and grazing activities shall be designed to allow at-risk plant species to persist in the plan area over the long term.
- 02 New, reconstructed, or replaced livestock water developments shall be designed to retain hydrologic conditions and to facilitate animal escape for all types of wildlife.

Guidelines (FW-RANGE-GD)

- 01 To ensure the sustainability and resiliency of vegetation in riparian areas, a four-inch or greater stubble height of hydrophytic plant species should be present on the greenline at the end of the grazing season, unless monitoring or site-specific review demonstrates a more appropriate stubble height.

- 02** To maintain or improve the resiliency of riparian and upland ecosystems and associated flora and fauna, livestock grazing utilization should be established under current term grazing permits or Allotment Management Plans. New or revised allotment management plans should include grazing practice design measures such as stocking levels, length of grazing season, and timing of grazing, and shall be adjusted if allotment monitoring indicates a need for change.
- 03** To sustain livestock grazing, determinations on the best practices and management of grazing allotments following a major disturbance – including, but not limited to, fire or flood – should occur on a case-by-case basis, i.e., after consideration of site-specific resource conditions. Areas should be evaluated to determine if rest from livestock grazing is necessary for recovery of desired vegetation conditions and related biophysical resources.
- 04** New or modified range improvements should be designed to sustain and enhance healthy soil and water conditions; minimize negative livestock and wildlife interactions; allow wildlife movement; to protect plants and springs of importance to Nations, Tribes, and Pueblos; and minimize recreation user conflicts.
- 05** To ensure vegetative ground cover is retained in areas of livestock grazing, continuing mitigation or rest-rotation practices and follow-up maintenance activities should be designed to ensure vegetative ground cover exceeds 80 percent of adjacent, similar, undisturbed sites.
- 06** To maintain the resiliency of ecological systems, new livestock corrals should be located away from communities of biological soil crust, riparian areas, springs, wetlands, and other water features.
- 07** To facilitate livestock loading and unloading, new livestock containment corrals should be located adjacent to roads.

Goals (FW-RANGE-GL)

- 01** Permittees and the forest work together to adjust the timing, intensity, and duration of livestock grazing to respond to livestock needs and changing resource conditions, including following major disturbances, such as flood and fire.
- 02** Work with other federal, state, county, and local government entities; nongovernmental organizations; and pueblos, tribes, nations to maintain or improve rangeland conditions.
- 03** New partnerships with stakeholders increase maintenance and construction opportunities.

Timber Management

See Also

Vegetation Communities and Resources, Wildlife, and Fire and Fuels Management.

Description and Values

Softwood saw timber, poles and posts, fuel wood, and a variety of special forest products are harvested from the Manti-La Sal National Forest. These products contribute to the economic activity of counties surrounding the forest and provide local communities with forest products such as fuelwood, Christmas trees, and food and seeds. Households may use wood to heat their homes for both cultural and economic reasons. When natural gas prices are high, wood offers an affordable fuel source.

Desired Conditions (FW-TIMBER-DC)

- 01** Lands identified as suitable for timber production, as shown in Table 5, have a regularly scheduled timber harvest program that contributes jobs, income, and raw materials to the local and regional economy, while achieving ecosystem resilience and sustainability by meeting management direction and moving towards desired conditions.

Table 5. Timber Suitability Analysis

Land Classification Category	Acres
Total National Forest System lands in the plan area	1,340,500
Lands not suited for timber production due to legal or technical reasons	1,182,800
Lands that may be suited for timber production	157,700
Total lands suited for timber production because timber production is compatible with the desired conditions and objectives established by the plan	149,000
Lands not suited for timber production because timber production is not compatible with the desired conditions and objectives established by the plan	8,700
Total lands not suited for timber production	1,191,500

- 02** A variety of forest products of social or economic value – such as fuelwood, posts, poles, and logs, Christmas trees, native seeds, and ornamentals – are available.
- 03** On timbered lands, dead or dying trees are salvaged to recover as much of the economic value of the wood as possible. This is done while moving towards or achieving desired conditions and management direction for other resources.
- 04** Annual projected wood sale quantity (PWSQ) will be the sum of projected timber sale quantity (PTSQ) and products not meeting timber product utilization standards.

Objectives (FW-TIMBER-OB)

- 01** Offer timber, meeting timber product utilization standards, for sale over the first decade of the plan at a projected timber sale quantity (PTSQ) of 112,000 CCF or 64 million board feet.
- 02** Offer wood products, including fuelwood, biomass, and other volumes that do not meet timber product utilization standards, for sale over the first decade of the plan at an approximate quantity of 52,000 CCF or 30 million board feet.

Standards (FW-TIMBER-ST)

- 01** The quantity of timber that may be sold per decade shall not exceed 10 times the annual sustained yield limit. The decadal sustained yield limit is calculated at 680,000 CCF or 388 million board feet. This includes timber sold from both lands suitable for timber production and lands not suitable for timber production. Cutting of trees that have been killed or severely damaged by fire, windthrow, or other disturbances are not subject to this limitation. Trees cut to manage insect infestations and disease spread are also not subject to this limitation. Tree cutting for salvage or sanitation may be harvested above the sustained yield limit, where such harvest is consistent with desired conditions for other resources.
- 02** Vegetation management projects shall be shaped and blended to the natural terrain to the extent practicable to meet the scenic integrity objectives.
- 03** Openings created by clearcutting, seedtree, shelterwood, or other harvests that are designed to regenerate an even-aged stand of timber in one harvest operation shall not exceed 40 acres. This

standard applies to individual harvest proposals on forest lands only and need not consider existing forest openings on forest lands that are adjacent to private or other agency lands. The 40-acre size limit shall not apply to areas that are harvested as a result of natural catastrophic conditions such as fire, insect and disease attacks, or windstorms.

- 04** To minimize detrimental soil disturbance, vegetation management activities using conventional ground-based equipment shall only operate on sustained slopes less than 40 percent. High flotation ground-based equipment may be used on sustained slopes less than 60 percent. Aerial systems may be used on all slopes. Increased percent slope exceptions for equipment use may only be considered when site-specific analysis indicates soil function can be maintained.
- 05** Treatments within forested vegetation types, including woodlands, which cut, burn, establish, or otherwise modify forest vegetation shall have a silviculture prescription prepared or reviewed by a certified silviculturist prior to implementation.

Guidelines (FW-TIMBER-GD)

- 01** To ensure restocking after regeneration harvest, minimum adequate stocking levels should be as provided in Table 6. A certified silviculturist may prescribe different minimum stocking requirements, which are more appropriate for site-specific conditions, stand management objectives, or due to fire or salvage conditions.

Table 6. Minimum trees per acre within five years of planting based on forest cover type and site productivity ranges.

Site Productivity	Aspen	Spruce and Fir	Mixed Conifer	Ponderosa Pine
20-49	300	150	150	150
50 and greater	300	195	180	180

- 02** To achieve minimum restocking densities, as shown in Table 6, planting densities should be within the ranges shown in Table 7.

Table 7. Planting densities based on coniferous forest type and site productivity.

Site Productivity	Spruce and Fir	Mixed Conifer	Ponderosa Pine
20-49	300-360	300-360	300-360
50-84	360-540	435-550	435-550
85 and greater	360-680	435-680	435-680

Note: Aspen is not included in this list because planting of aspen is not the desired method for restocking.

- 03** To provide sufficient coarse woody debris and maintain snags or standing dead trees over the long term for wildlife habitat and ecosystem processes, snags, felled for safety concerns during vegetation management activities, should be left on site. Exceptions may occur where there is elevated concern for public safety or fire risk, such as in developed sites and areas adjacent to infrastructure.
- 04** To achieve desired stocking levels in all vegetation communities except aspen, site preparation should be used as an appropriate practice. Site preparation is acceptable in aspen but should only be undertaken when indicated by site-specific requirements or other resource desired conditions.
- 05** To achieve desired stocking levels during reforestation activities, regeneration protection measures, including, but not limited to shade tube use and fencing, should be used in all

vegetation communities when indicated by site-specific conditions and other resource desired conditions.

- 06** To achieve desired stocking levels in all vegetation communities, natural reforestation should be considered as an appropriate practice.
- 07** To achieve reforestation desired conditions and stocking levels, planting and seeding should be used in all vegetation types except aspen. In aspen stands, reforestation should only occur through natural regeneration.
- 08** To achieve desired stocking levels and fuels conditions, thinning of live material and salvage of dead material may occur in all vegetation communities except aspen.
- 09** To ensure forest stands have adequate time to mature, rotation for all conifer types should be between 80 and 140 years. Rotation for aspen should be between 80 to 120 years.
- 10** **To achieve desired age-class compositions for each** vegetation community, silvicultural systems and harvest methods as listed in Table 8 should be applied during vegetation management timber harvests. Site-specific and environmental conditions may allow other methods and systems to be used.

Table 8. Appropriate harvest methods by vegetation communities.

Age	Spruce and Fir	Ponderosa Pine	Douglas Fir	White Fir	Aspen
Even	Shelterwood	Shelterwood and Seed-tree	Shelterwood and Seed-tree	Shelterwood	Clearcut
Uneven	Group selection and single-tree	Group selection and single-tree selection	Group selection	Group selection	Patch cut and single tree

- 11** To provide access to timber products for local communities – including, but not limited to, Nations, Tribes, and Pueblos – consider opportunities to provide fuelwood and other products for traditional use during vegetation management projects.
- 12** To guide proper stand density management and overall stand health, figures in Table 9 are indicators and should be applied in prescription and project development.

Table 9. Stand density index levels for stands greater than 5-inch diameter at breast height, by vegetation community.

Stand Density Level	Spruce and Fir	Ponderosa Pine	Douglas Fir	White Fir
Maximum	670	830	600	830
Upper ¹	302	291	240	374
Lower ²	134	127	149	205

¹ Lower management level stand density index is start of root or crown competition.

² Upper management level stand density index is start of imminent mortality zone.

Goals (FW-TIMBER-GL)

- 01** The availability of forest products contributes to the livelihoods and traditions of communities near the forest, as well as fostering a connection to the land.

CHAPTER 3. DESIGNATED AREA DIRECTION

The Manti-La Sal National Forest includes areas that contain special, exceptional, or unique values that provide important ecosystem services. Many of these areas meet the criteria to be considered special places and are awarded specially designated status. Designation identifies and establishes management focused on maintaining or enhancing the unique special character or purpose for which the area was designated. This status can be on a national, regional, or local scale. There are two primary categories of designated areas: those designated by statute and those established administratively. Once established, the designation continues until a subsequent decision by the appropriate authority removes the designation. Examples of administratively designated areas are experimental forests, research natural areas, scenic byways, botanical areas, and inventoried roadless areas. Management direction for each of the designated areas is outlined in the sections that follow. Designated areas on the Manti-La Sal NF include wilderness areas, national scenic trails, national heritage areas, research natural areas, scenic byways, botanical areas, inventoried roadless areas, experimental ranges, historic districts, and historic battlegrounds.

Wilderness Areas

Description and Values

Currently, the Manti-La Sal National Forest manages two designated wilderness areas: the Nelson Mountain Wilderness, designated in 2019, and comprising approximately 7,000 acres and the Dark Canyon Wilderness, designated in 1984, and comprising approximately 47,000 acres. Both designated wilderness areas are shown on maps in Appendix A. Management activities, other than the special provisions in the Wilderness Act, are limited to those deemed necessary to maintaining or enhancing the wilderness character of the areas. These areas contribute significantly to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors, reference areas, primitive recreation opportunities, self-reliance, and places for people seeking natural scenery and solitude. Fire is allowed to play a more natural role in maintaining the ecosystem. In Dark Canyon Wilderness, the abundant heritage resources are important to the unique character of the wilderness but are not generally interpreted on-site unless necessary for resource protection.

Desired Conditions (DA-WILD-DC)

- 01** Management activities within designated wilderness areas preserve and protect wilderness character, as required by the Wilderness Act.
- 02** Natural ecological processes and disturbances – such as succession, fire, avalanches, insects, and disease – are the primary forces affecting the composition, structure, and pattern of vegetation.
- 03** Wilderness areas provide opportunities for visitors to experience natural ecological processes and disturbances with only a limited amount of human influence.
- 04** Wilderness areas contribute significantly to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors, reference areas, primitive recreation opportunities, self-reliance, and places for people seeking natural scenery and solitude.
- 05** Overnight use does not affect water quality, wildlife, vegetation, cultural resources, or wilderness character.
- 06** There is little contact with other individuals or groups when traveling cross-country. When on trails, encounters with large groups are infrequent, with some encounters with small groups or individuals taking place.

- 07 Water quality and quantity of seeps, springs, or riparian areas preserve the biological, physical, and chemical integrity of the wilderness ecosystem in which they occur.
- 08 Outfitters and guides model appropriate wilderness practices and incorporate awareness for wilderness values in their interaction with clients and others. Outfitter and guide recreation special uses support identified public need and provide service for realizing the recreational purposes of the wilderness areas.
- 09 Wilderness areas are free of noxious weeds.
- 10 Use within the Peavine Corridor has a minimal effect on Dark Canyon wilderness resources; motorized use stays within the corridor and does not enter the designated wilderness.

Objectives (DA-WILD-OB)

- 01 Within ten years of plan approval, manage all wilderness areas to standard, based on the agency's performance accountability measure for wilderness. To achieve this:
 - Prepare a solitude monitoring plan for both wilderness areas within ten years of plan approval.
 - Complete a capacity study, needs assessment, and extent necessary determination for commercial recreation special uses in Dark Canyon Wilderness within ten years of plan approval.
 - Complete noxious weed treatments in wilderness areas annually.
 - All wilderness campsites are inventoried at least once every five years.

Standards (DA-WILD-ST)

- 01 Management activities shall be limited to those deemed necessary to maintain or enhance the wilderness character of the area and evaluated through a minimum requirement analysis.
- 02 Interpretive facilities shall not be developed at cultural, historic, or paleontological sites, unless required to mitigate damage to wilderness character or these resources.
- 03 A Wilderness Resource Advisor or other resource specialist with knowledge of wilderness management shall be consulted or assigned to all wilderness fires.
- 04 If fire management actions are required within wilderness, the Forest Service shall apply minimum impact strategies and tactics to manage wildland fire that protect wilderness character, unless more direct attack is needed to protect life or adjacent property or mitigate risks to responders.
- 05 New special use authorizations shall only be authorized if consistent with the Wilderness Act.
- 06 Operating plans for all permitted outfitter and guides shall include wilderness-specific conditions.
- 07 Overnight use permits for outfitter and guides shall specify where camping may occur.
- 08 Group sizes greater than 15 people shall not be authorized.
- 09 Campsites with unacceptable impacts shall be closed and rehabilitated.
- 10 The *Wilderness Grazing Checklist* shall be used when managing livestock grazing in the wilderness areas.
- 11 Scenery management should be consistent with the scenic integrity objective of Very High.

Guidelines (DA-WILD-GD)

- 01 To preserve wilderness character, trail markers should only be present at trail intersections. These markers should indicate routes, but not destinations or distances.
- 02 To maintain wilderness character, management actions along the motorized Peavine Corridor should minimize user conflict and reduce impacts on soil, watershed, vegetation, and other resources.

Goals (DA-WILD-GL)

- 01 Maintain and promote wilderness volunteer projects and actions to connect the public to the designated wilderness areas and the specific contributions of these lands to ecological and social sustainability.

Bears Ears National Monument

Description and Values

The Bears Ears National Monument, also known as BENM, was established by Presidential Proclamation 9558 on December 28, 2016. On December 4, 2017, Presidential Proclamation 9681 clarified and modified the boundaries of the Bears Ears National Monument. On October 8, 2021, Presidential Proclamation 10285 modified the boundaries again and further defined the objects and values to be protected. A map of the portion of Bears Ears National Monument on the Manti-La Sal National Forest is shown in Appendix C.

Bears Ears National Monument encompasses Bureau of Land Management administered land as well as U.S. Forest Service administered lands and is co-managed by both agencies and Bears Ears Commission, which represents the five Tribes listed in the Presidential Proclamation designating the monument.

The major geographic features on the U.S. Forest Service administered lands of the monument are Bears Ears Buttes and Elk Ridge. Numerous canyons with perennial and annual streams, as well as seeps and springs, are present across the landscape. The Doll House is one of the many unique archaeological sites located on U.S. Forest Service administered lands of the monument. Dark Canyon Wilderness is also within the Bears Ears National Monument boundary.

The primary existing land uses of the monument are recreation; paleontological and archaeological exploration and study; religious uses for members of Nations, tribes, and pueblos; and livestock grazing. Popular recreation activities include hiking, backpacking, off-highway vehicle riding, scenic driving, and dispersed camping. Cultural tourism has increased in popularity, as visitors are drawn to pre-contact and historic cultural resources such as pictographs, petroglyphs, and cliff dwellings.

Desired Conditions (DA-BENM-DC)

- 01 As identified by the most recent Presidential Proclamation, objects of antiquity and of historic and scientific interest, and the physical and natural setting in which they occur, are protected.

Standards (DA-BENM-ST)

- 01 Bears Ears National Monument shall be managed under the most recently approved *Bears Ears National Monument Management Plan*, Presidential Proclamation, or interim guidance.
- 02 The *Bears Ears National Monument Management Plan* direction, Presidential Proclamation, or interim guidance shall take precedence over other direction in the Manti-La Sal plan, unless plan

direction provides more protection and proper care and management of objects of antiquity and of historic or scientific interest identified in the most recent Presidential Proclamation.

Research Natural Areas

See Also

Alpine, Wilderness Areas, Watershed and Aquatic Resources, Cultural and Heritage Resources, and Livestock Grazing and Range Management.

Description and Values

The Forest has six designated research natural areas, which are listed in Table 10. Research natural areas preserve representative areas that typify important forest, shrubland, grassland, alpine, other natural environments or areas that have special or unique characteristics of scientific importance. Research natural areas are part of a national network of areas designated, in perpetuity, for research and education to preserve and maintain key elements of biological diversity. These locations are used as baseline areas for measuring ecological changes and as control areas for evaluating and monitoring through non-manipulative research, observation, and study.

Each research natural area has its own establishment record that contains detailed location maps, information on distinguishing features, and the purpose for which the research natural area was established. The research natural areas are managed in coordination with the Rocky Mountain Research Station.

Table 10. Research natural areas on the Manti-La Sal National Forest.

Name	Ranger District	Purpose for Establishment	Acres
Mount Peale	Moab	Subalpine fir and Engelmann spruce forest and krummholz; cirque basins, rock glaciers and talus; alpine turf and boulder-field communities; rare plants	2,380
Mill Creek Gorge	Moab	Deep gorge containing the steep-gradient Mill Creek; south exposures support pinyon-juniper woodlands; north exposures support mesic mountain brush communities with Gambel oak, Utah serviceberry, and birchleaf mountain mahogany; Douglas-fir is associated with moist microsites; and riparian areas.	680
Nelson Mountain	Ferron	Unique vegetation communities with curl-leaf mountain mahogany, white fir.	490
Hideout Mesa	Moab	Two-needle pinyon and Utah juniper woodlands at upper elevational limits, burned by wildland fire in 2002; patches of mountain brush and grassland; limited areas of ponderosa pine and big sagebrush.	360
Cliff Dwellers Pasture	Monticello	Water birch and Gambel oak-bigtooth maple bottomland communities; pinyon-juniper woodlands; Navajo sandstone cliffs; sandstone arch; packrat middens; rare plants	264
Elk Knoll	Sanpete	Relatively level bench supporting subalpine tall forb vegetation; forests on adjacent slopes of subalpine fir and Engelmann spruce	40

Source: Establishment records for each research natural area.

Desired Conditions (DA-RNA-DC)

- 01** Research natural areas maintain and protect the natural conditions and values for which they were designated, as shown in Table 10 and in establishment records or management plans, when they exist.
- 02** Research natural areas serve as a baseline, unaltered and intact, where scientific research, monitoring, observation, and education by the agency, academia, and public interests can be conducted.
- 03** Recreation use occurs at levels that do not interfere with, or impact, the values for which these areas were designated.
- 04** In the Mount Peale research natural area, the alpine turf communities and other vegetated areas exhibit minimal impacts from human use and introduced ungulate populations.
- 05** All research natural areas have comprehensive management plans.

Objectives (DA-RNA-OB)

- 01** Over the life of the plan, write comprehensive management plans for all research natural areas that do not have them.
- 02** Over the life of the plan, request all research natural areas be withdrawn from mineral entry, in conformance with section 204 of the Federal Land Policy and Management Act of 1976 (National Forest Management Act of 1976, 1976).

Standards (DA-RNA-ST)

- 01** To comply with the intent of research natural area designation, recreational use shall be restricted or prohibited through special order (United States of America, 2023; 36 CFR 261.53) if such use is not compatible with the objectives for which the research natural area was designated.
- 02** To comply with the intent of research natural area designation, development of new facilities and infrastructure – including, but not limited to roads, water impoundment structures, and both recreational and administrative facilities – shall not be authorized unless they contribute to the objectives or protection of the research natural area.
- 03** To comply with the intent of research natural area designation, timber harvests, fuelwood gathering, and forest product harvests – including Christmas tree cutting – shall not be authorized, unless for limited personal use requested by Nations, Tribes, and Pueblos.
- 04** New special use permits shall only be issued for research opportunities, tribal activities, and outfitting and guiding that is consistent with the establishment record values. Existing permits may continue to be reissued for the existing purposes and those that are consistent with establishment record.
- 05** Recreation event permits shall not be issued.
- 06** Recreational special use permits for overnight use within the Mount Peale research natural area shall not be issued.
- 07** Recreational special use permits within the Mount Peale research natural area shall include a stipulation to supply clients with and educate clients about the proper use and disposal of, human waste containment bags.

- 08 No more than three outfitter and guide permits shall be issued for use within the Mount Peale research natural area between May and November.
- 09 To comply with the intent of research natural area designation, proposed mineral or energy-related geophysical activity shall be evaluated, and protective stipulations or terms and conditions be added, to ensure protection of the values for which the research natural area was established.
- 10 No consent to the introduction of non-native species into research natural areas shall occur.
- 11 To comply with the intent of the designation of Cliff Dwellers research natural area and to protect cultural sites and landscapes, overnight use in Cliff Dwellers research natural area shall not occur.
- 12 Management interventions and actions shall not be undertaken, unless needed to maintain the integrity of the research natural area and its values.
- 13 Prescribed fire shall be allowed to simulate natural fire processes and be compatible with ongoing research.
- 14 Trails shall only be built for research or study purposes or to mitigate recreation impacts.

Guidelines (DA-RNA-GD)

- 01 To maintain the scenic character of the research natural areas, management activities including authorized research and monitoring should be consistent with the assigned scenic integrity objectives of the areas.
- 02 To maintain the archaeological values of the research natural areas, management activities including authorized research and monitoring should not alter archaeological resources in the areas.

Goals (DA-RNA-GL)

- 01 The Forest Service will continue to coordinate and consult with Rocky Mountain Research Station to protect and manage the ecological features and values for which each research natural area was established, in accordance with the establishment records.

National Scenic Byways

Description and Values

The Energy Loop: Huntington and Eccles Canyons National Scenic Byway (referred to here as 'the Byway') is located within the heart of Utah's energy-producing country. The scenic byway includes views of high-elevation lakes, diverse vegetation, spectacular fall colors, and vertical cliffs and escarpments. Approximately 36 miles of the total 82 miles of the byway are located on the Manti-La Sal National Forest.

Desired Conditions (DA-BYWAY-DC)

- 01 The intrinsic scenic, natural, historical, cultural, and recreational qualities for which the Byway was designated are present along it.
- 02 The rich history associated with, and scenic value of, the road's location is apparent and accessible to those driving and stopping along it.

Objectives (DA-BYWAY-OB)

- 01 Within ten years of plan approval, hazard trees are removed, noxious weed infestations are controlled, and the fisheries resource is restored in Huntington Creek.

Standard (DA-BYWAY-ST)

- 01 Management actions shall follow the Energy Loop Corridor Management Plan.
- 02 Scenery management should be consistent with the scenic integrity objective of High or Very High.

National Recreation Trails**Description and Values**

Two National Recreation Trails, Fish Creek and Left Fork of Huntington Creek, were designated on September 14, 1979.

The Fish Creek National Recreation Trail, located on the Ferron-Price Ranger District, generally parallels Fish Creek. Approximately 10 miles in length, the trail climbs 1,100 feet from the trailhead at Fish Creek Campground at 7,780 feet to Skyline Drive at 8,880 feet. The vegetation ranges from willows and grass, along the stream course, to a mix of sagebrush and grass on the southern exposures of the canyon. Aspen and mixed conifer stands occur as the elevation increases. The trail is 12 to 18 inches wide, and the tread condition ranges from packed mineral soil to very rocky. The level of difficulty varies from easy to moderate.

The Left Fork of Huntington Creek National Recreation Trail, located along the Left Fork of Huntington Creek, is 6 miles in length and climbs 900 feet from the trailhead at the Forks of Huntington Campground at 7,500 feet to Millers Flat Reservoir at 8,400 feet. This trail is located on the Ferron-Price Ranger District. One of the most popular day hikes on the district, this trail was originally constructed to access the Millers Flat area for fire suppression activities and livestock grazing. Numerous waterfalls and pools occur along the creek, providing opportunities for photographers and anglers. The Left Fork of Huntington Creek is a Blue-Ribbon Fishery, where anglers enjoy catching brown, cutthroat, and rainbow trout.

Both trails afford access to desirable hunting and fishing opportunities. Each National Recreation Trail connects with other forest trails that cross private property, making it difficult to access the National Recreation Trails from some locations or to complete trail loops.

Desired Conditions (DA-TRAIL-DC)

- 01 The values for which the trails were designated, as well as the ecological features comprising the surrounding landscape, preserve the sense of place, solitude, and aesthetic settings of each National Recreation Trail.

Objectives (DA-TRAIL-OB)

- 01 Offer a minimum of one volunteer trail maintenance project on each trail, every two years.
- 02 Assess the need to, and if needed, update, replace, or install new informational or interpretive signs on each trail within five years of plan approval.

Standards (DA-TRAIL-ST)

- 01 Removal of common variety minerals shall only be permitted from isolated and aesthetically acceptable locations within the trail corridors.

- 02 Fish Creek National Recreation Trail shall be managed as a non-motorized trail designated for foot, equestrian, and mountain bike travel.
- 03 Left Fork of Huntington Creek National Recreation Trail shall be managed as a non-mechanized trail designated for foot and equestrian travel.

Goal (DA-TRAIL-GL)

- 01 Develop partnerships with private landowners along Mill Canyon Trail number 5063 and Gooseberry Creek Trail number 5354 to improve National Recreation Trail connectivity and access.

Botanical Area

Description and Values

There is one Botanical Area on the Manti-La Sal. The Mont E. Lewis Botanical Area is named for Mont E. Lewis, a forest officer and eminent botanist, ecologist, and teacher of the intermountain west. According to the 1995 Establishment Record, the Mont E. Lewis Botanical Area, located in Scad Valley, includes a wet meadow complex at the toe of Seeley Mountain, overlooking the extended Joes Valley graben. The botanical area is unique due to the variety of wetland species that occur in the area. Lewis identified *five major meadow plant communities* in what is now his namesake botanical area. This high concentration of communities and species in a small area sets it apart from other areas of the forest. The wetland species are strongly segregated by water temperature or soil moisture, giving rise to ecological interest in the area.

The botanical area supports several unique plant species which do not occur elsewhere on the Manti-La Sal National Forest, and which are uncommon in Utah; it is exceptionally rich in vascular plant species. Some species found in this wet meadow are quite rare and attract botanists to study them and other nearby plant communities. In addition to the wetland plant community types, several willows, *Salix* species, as well as about twenty species of sedge, including *Carex*, *Eleocharis*, and *Kobresia*, occur here. Learning more about the noteworthy species is one of the main attractions of the botanical area.

Desired Conditions (DA-LEWIS-DC)

- 01 Plant communities within the botanical area are healthy, vigorous, and self-perpetuating, with a diverse composition of native species that includes key herbaceous and woody plants.
- 02 Riparian or wetland areas are dominated by deep-rooted, hydric species.
- 03 Upland watershed, soil, and vegetation conditions contribute to healthy, resilient riparian areas and wetlands associated with the botanical area and do not contribute to its degradation.
- 04 Riparian and wetland communities dominate this area. Willows, *Salix* species, dominate the upper tree and shrub canopy while native obligate wetland grasses and forbs dominate the understory.

Objectives (DA-LEWIS-OB)

- 01 Every ten years, evaluate and compare the plant composition with historic plant composition data from the 1995 designation and 2000 assessment.
- 02 To ensure the botanical area characteristics for which this location was designated remain intact, closure orders for motorized and mechanized use within the botanical area should be written within five years of the record of decision.

Standards (DA-LEWIS-ST)

- 01 Motorized and mechanized use is not suitable and shall not be authorized within the botanical area. Emergency services motorized and mechanized use is allowed.
- 02 New motorized or mechanized trails and roads shall not be constructed.
- 03 To comply with the botanical area designation document, livestock grazing and associated management practices shall avoid the botanical area to the extent practicable. No new structures, salting, trailing, or bedding shall be authorized within or adjacent to the botanical area. Permittees shall not be authorized to move livestock into the area; any use that occurs should be incidental.
- 04 To comply with the botanical area designation document, commercial timber production harvest shall not occur. Tree cutting may occur incidental to other management activities for the benefit of the botanical area or if necessary in emergency situations.
- 05 No apiaries shall be authorized within five miles of the botanical area.

Goals (DA-LEWIS-GL)

- 01 The forest and partners create and facilitate education programs about the diverse plant species and habitat of the unique plant species found in the Mont E. Lewis Botanical Area.

Great Basin Experimental Range

The Great Basin Experimental Range was set aside in 1912, under the name of the Utah Experiment Station, in response to severe flooding in the late 1800s and early 1900s. It was established in Ephraim Canyon on the Sanpete Ranger District to study mountain watersheds and rangelands to develop management actions that maintain and improve healthy watersheds. It is considered a pioneering study site for understanding the discipline of range management. Since 1912, it has undergone four name changes: Great Basin Experiment Station in 1918; Great Basin Branch Experiment Station in 1930; Great Basin Research Center in 1947; and now Great Basin Experimental Range, a name it has held since 1970.

This circa 4,608-acre rangeland lies on the west face of the Wasatch Plateau. Encompassing about a ten mile stretch of Ephraim Canyon, the elevations range from approximately 4,500 feet to 7,000 feet and encompass nine life zones. These zones are so close together and easily accessed that they provide a convenient and efficient way to study a great diversity of plant species, soils, and climate. This diversity further allows a wide variety of ecologically-oriented problems of watershed management to be studied and researched in a single location. To date, nearly 200 publications have resulted from research on this range and its scientists have made significant and lasting contributions to the development of the sciences of watershed and range management. This has benefited land management and local economies throughout the world. About 100 years of detailed vegetation, soil, and climate data from past research studies are still available for use in future trend-based research and reference.

In addition to a few ongoing research projects, the Great Basin Experimental Range provides for other multiple uses, including activities such as livestock grazing, fuels management, recreation, and water collection and conveyance.

Desired Conditions (DA-GBER-DC)

- 01 The Great Basin Experimental Range maintains its research integrity and availability for research and reference as specified by the Rocky Mountain Research Station.
- 02 The Great Basin Experimental Range provides multiple uses consistent with its purpose, direction, and research.

Standards (DA-GBER-ST)

- 01 All management activities are authorized and approved by the Rocky Mountain Research Station director or their designee.
- 02 The Rocky Mountain Research Station director or their designee shall be consulted about wildland fire management within the experimental range.

Guidelines (DA-GBER-GD)

- 01 To maintain the values for which the experimental range was established, activities proposed should be consistent with ongoing and planned future research in the area.

Goals (DA-GBER-GL)

- 01 The Forest Service will continue to partner with Rocky Mountain Research Station to protect and manage the values for which the Great Basin Experimental Range was established.
- 02 Educational and interpretive opportunities about the experimental range's history and significance will be provided to the public.

Inventoried Roadless Areas

See Also

Recreation and Access, Wilderness Areas, and Recommended Wilderness Management Areas.

Description and Values

Areas managed under these specific components are those identified as Inventoried Roadless Areas through the Forest Service Roadless Area Review process. All Inventoried Roadless Areas are managed consistent with the 2001 Roadless Rule, except a portion of the Roc Creek Inventoried Roadless Area within the state of Colorado, which is managed as an Upper Tier area under the Colorado Roadless Rule. The Manti-La Sal National Forest includes 39 mapped Inventoried Roadless Areas that vary greatly in size, elevation, and habitat; their size ranges from about 800 to 60,000 acres. In total, the Inventoried Roadless Areas across the Manti-La Sal NF comprise approximately 645,343 acres, with an average size of circa 12,000 acres.

Inventoried Roadless Areas provide clean drinking water and function as biological strongholds for populations of threatened and endangered species. They provide large, relatively undisturbed landscapes with high scenic quality. These areas also provide biological diversity, which is important for wildlife habitat and the long-term survival of many at-risk species. Inventoried roadless areas provide opportunities for dispersed outdoor recreation, opportunities that diminish as open space and natural settings are developed elsewhere and provide reference areas for study and research.

Table 11. Manti-La Sal inventoried roadless areas and their acreages, organized from largest to smallest.

Inventoried Roadless Area	District	Acres
Muddy Creek - Nelson Mountain	Ferron	58,988
East Mountain	Price and Ferron	30,681
Dairy Fork	Pricea and Sanpete	30,199
Sanpitch	Sanpete	29,108
Big Bear Creek	Ferron	28,418
Boulger - Black Canyon	Ferron	23,268
Price River	Price	22,591

Cedar Knoll	Price and Sanpete	22,485
Horse Mountain - Manns Peak	Moab	22,154
Levan Peak	Sanpete	22,077
Blue Mountain	Monticello	21,640
Biddlecome - Rock Canyon	Ferron	18,183
Big Horseshoe	Sanpete	17,544
Oak Creek	Sanpete	16,743
Hammond - Notch Canyon	Monticello	16,558
South Mountain	Moab	14,945
Dark – Woodenshoe Canyon	Monticello	14,543
Allen Canyon - Dry Wash	Monticello	13,986
White Knoll	Ferron	13,767
Shay Mountain	Monticello	13,026
Arch Canyon	Monticello	12,770
Roc Creek (in Colorado and Utah)	Moab	12,750
Nuck Woodward	Price	12,072
Bennion Creek	Price	11,575
Twelve Mile Creek	Sanpete	10,227
Mt. Peale	Moab	9,621
North Horn	Ferron	8,300
Ruin Canyon	Monticello	8,215
Birch Creek	Sanpete	7,998
White Mountain	Sanpete and Ferron	7,127
Rolfson - Staker	Price	7,013
Gentry Mountain	Price	6,436
Black Mountain	Sanpete	6,385
Coal Hollow	Price	6,265
Straight Canyon	Ferron	6,012
Wildcat Knolls	Ferron	5,205
Musinia Peak	Sanpete	4,834
Heliotrope	Ferron	4,523
Cliff Dwellers Pasture	Monticello	780
Total	Forest	599,011

Source: Manti-La Sal GIS data.

Desired Conditions (DA-IRA-DC)

- 01 Roadless areas maintain the roadless characteristics as described in the 2001 Roadless Rule or, where applicable, the Colorado Roadless Rule.
- 02 Roadless areas serve as foraging, security, denning, and nesting habitats for wildlife and provide habitat connectivity for the movement of wildlife.

Standards (DA-IRA-ST)

- 01 Management activities shall be consistent with the 2001 Roadless Rule, except for the portion of the Roc Creek Inventoried Roadless Area within the state of Colorado.
- 02 Management activities in the Colorado portion of the Roc Creek Inventoried Roadless Area shall be managed as an *Upper Tier* area under the Colorado Roadless Rule.

- 03 All actions proposed within the inventoried roadless areas shall be analyzed to determine their potential impacts on roadless character. The actions shall be coordinated with the appropriate line officers.

Great Basin Station Historic District

See Also

Cultural and Heritage Resources.

The Great Basin Research Station Historic District, built in 1912–16 and 1933–36, is in Ephraim Canyon on the Sanpete Ranger District. It was listed on the National Register of Historic Places in 1996. The historic district consists of the nine buildings at the experimental station headquarters and another three buildings, called the Alpine Cabin complex, located on experimental watersheds about three miles east of the headquarters complex near the head of Ephraim Canyon. The national register district includes about 72 acres encompassing the headquarters complex and 18 acres encompassing the Alpine Cabin complex. The Station's buildings provided living and laboratory space for the scientists, their families, and the station's research technicians. It was one of the world's first watershed research centers and its staff helped to develop the science of range management. The Station's history is on display in a small museum, which is open to visitors and event participants.

Desired Conditions (DA-GBS-DC)

- 01 Listed National Register property status is retained.
- 02 The Great Basin Station sustainably contributes to the educational mission of groups and organizations who use the facility.
- 03 Visitors can learn about the station's role in local history and its contribution to the development of watershed science.
- 04 The facility is available for permitted use by organizations that meet the educational mission of the facility.

Standards (DA-GBS-ST)

- 01 The historic integrity of the buildings shall be maintained through adherence to the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68).

Goals (DA-GBS-GL)

- 01 Permit holders use the facility in ways that contribute to the economic and social well-being of local communities.
- 02 Partner with permitted organizations to conduct maintenance activities at the station.

Pinhook Battleground National Register Site

See Also

Cultural and Heritage Resources.

Description and Values

The Pinhook Battleground National Register site is an 8-acre area in Pinhook Draw on the Moab Ranger District, designated in 1981. The site is the location of the last battle in a running fight between about

100 Ute and Paiute men, women, and children, and about 34 European American stockmen on June 15–16, 1881. The site includes a small, walled cemetery containing the remains of eight European Americans killed in the battle, who are commemorated on a single headstone. The burial locations of Ute and Paiute casualties are unknown. The basic outline of the significance of the location, is provided through an interpretive sign describing the events leading up to, and including, the final battle, created in partnership with the Grand County Historic Preservation Commission in 2010.

Desired Conditions (DA-PINHOOK-DC)

- 01 The setting of, and structures associated with, the Pinhook Battleground are maintained, protected against both human and natural damage. The surrounding landscape, which may contain the graves of Ute and Paiute fighters, is also protected from disturbance.
- 02 The sense of solitude and exposure, created by the unaltered visual and auditory setting, provides visitors with an opportunity to visualize the battle that occurred in this location and to ponder its meaning to Tribes and local communities.

Objectives (DA-PINHOOK-OB)

- 01 Monitor the condition of the walled cemetery and interpretive panel every five years for the life of the plan.

Standards (DA-PINHOOK-ST)

- 01 Maintenance work shall be done in partnership with local community groups, using techniques that meet the Secretary of the Interior’s Standards for the Treatment of Historic Properties, as described in 36 Code of Federal Regulations 68.

Guidelines (DA-PINHOOK-GD)

- 01 To recognize the Tribal and rural historic community value associated with the site, future on-site interpretation should be developed in consultation with both Tribes and local historical societies.

Goals (DA-PINHOOK-GL)

- 01 Partners, such as local historical societies, help maintain the cemetery in good condition and interpret the historic battle.

CHAPTER 4. MANAGEMENT AREA DIRECTION

The Manti-La Sal National Forest has several areas, identified as management areas, where a specific resource emphasis requires different management that cannot be met through the more general forestwide plan components. A management area represents a suite of desired conditions and management components to manage the resources more adequately in one area or several similar areas on the forest. Forestwide plan components are applied across the forest, unless direction for a specific management area differs from the forestwide direction. In this case, management area direction takes precedence. Direction for each management area is outlined in the sections that follow.

Recommended Wilderness Management Area

Description and Values

Recommendation of wilderness through this forest plan revision is a preliminary administrative determination and will receive further review and possible modification by the Chief of the Forest

Service, the Secretary of Agriculture, and the President of the United States. Congress reserves the authority to make final decisions on wilderness designation. The Forest Service preserves the opportunity for recommended wilderness areas to be included in the National Wilderness Preservation System by protecting and maintaining the ecological and social characteristics that provide the basis for their suitability for wilderness designation.

Refer to the Wilderness Evaluation Report for information on the Wilderness Evaluation process and for information on units that will be analyzed for possible recommendation by this plan.

Desired Conditions (MA-RECWILD-DC)

- 01 Recommended wilderness management areas maintain the wilderness characteristics they were evaluated to possess until their designation as wilderness or other use is determined by Congress.
- 02 The ecological and social characteristics of wilderness management areas, which provide the basis for wilderness recommendation, are maintained and protected.
- 03 Ecological processes such as natural succession, wildland fire, avalanches, insects, and disease function – with only a limited amount of human influence – are present and dominant.
- 04 Recommended wilderness areas provide opportunities for solitude or a primitive and unconfined type of recreation. Impacts from visitor use do not detract from the natural setting.
- 05 System trails support and preserve wilderness characteristics.
- 06 Outfitter and guide recreation special uses support identified public need and provide service for realizing the recreational purposes of the recommended wilderness areas.

Objectives (MA-RECWILD-OB)

- 01 To ensure maintenance of the wilderness characteristics that could allow these areas to be added to the Wilderness System, closure orders for commercial filming and launching should be written within five years of plan approval.
- 02 Over the life of the plan, request that all recommended wilderness areas be withdrawn from mineral entry in conformance with section 204 of the Federal Land Policy and Management Act of 1976 (National Forest Management Act of 1976).

Standards (MA-RECWILD-ST)

- 01 Commercial filming shall not be authorized in recommended wilderness areas.
- 02 Recreation opportunities shall be consistent with the recreation opportunity spectrum classification of Primitive.
- 03 Recommended wilderness areas shall not be suitable for timber production.
- 04 Timber harvest in a recommended wilderness area shall only occur if required to maintain the wilderness characteristics of that area.
- 05 Recommended wilderness areas shall be suitable for watershed restoration activities where the outcomes will protect their wilderness characteristics, if the ecological and social characteristics that provide the basis for wilderness recommendation are maintained and protected.
- 06 Recommended wilderness areas shall not be suitable for motorized and mechanized transport, unless for emergency services, valid existing rights, or administrative use.

- 07 Recommended wilderness areas shall not be suitable for new motorized or mechanized roads or trails.
- 08 Scenery management should be consistent with the scenic integrity objective of High or Very High.

Guidelines (MA-RECWILD-GD)

- 01 To maintain wilderness characteristics, fire suppression actions should apply minimum impact strategies and tactics, except when direct attack is needed to protect life, adjacent property, or to mitigate risks to responders.
- 02 To enhance or improve wilderness characteristics, vegetation management actions should be undertaken using the minimum tools and techniques necessary.
- 03 Tree cutting may occur incidental to other management activities, such as trail construction, trail maintenance, removal of hazard trees, or fireline construction.

Municipal Watershed Management Area

See Also

Municipal Water Sources, Recreation and Access, and Livestock Grazing and Range Management.

Description and Values

This management area applies to the discrete acres to the west of the cities of Blanding and Monticello. These forest acres provide most of the water supply for the two cities. This area includes some select watershed areas, some springs and other water sources dedicated to the production of municipal water. The Utah Department of Environmental Quality rates this area as a Category 1 watershed, indicating it should be managed to maintain both a pristine state of ecological function and the ability to supply water to municipalities. While no formal, written agreements exist between the Forest Service and municipalities, this management area is recognized by the Forest as a distinct resource location where the focus should be on providing high quality water, in an adequate quantity, to the adjacent communities.

Desired Conditions (MA-MWS-DC)

- 01 A long-term clean water supply for the communities of Blanding and Monticello is provided.
- 02 The Category 1 watershed supplying the communities of Blanding and Monticello is maintained in a high functioning condition that ensures no interruption of water supply to the communities.
- 03 The management area is resilient to potential large-scale disturbance events, including but not limited to outbreaks of insect and disease, or stand-replacing wildland fire.

Objectives (MA-MWS-OB)

- 01 If degradation to watershed function or water supply are identified, actions to remedy the degradation and improve the health and resiliency will be taken within five years of identification.

Standards (MA-MWS-ST)

- 01 Overnight use within the management area boundary shall not be authorized.
- 02 Special use permits shall not be authorized unless they include stipulations for maintenance of water quality and quantity within the management area boundary.

- 03 Commercial timber production shall not occur, but timber harvest may occur to protect or enhance the water supply, quality, and quantity to adjacent communities.

Guidelines (MA-MWS-GD)

- 01 To avoid long-term impairments to the water supply, vegetation management activities should demonstrate a long-term benefit to the water quality or quantity. A short-term impact to the water quality or other natural resources may occur if a long-term benefit is expected.
- 02 To minimize the probability of large-scale disturbances, including but not limited to insect and disease outbreaks, and stand-replacing wildland fires, vegetation management activities should be undertaken.
- 03 To avoid water quality contamination, grazing should not occur within the management area.

Goals (MA-MWS-GL)

- 01 The Forest Service cooperates with the city of Blanding and the city of Monticello in sustainable land management of the management area and its municipal watersheds.

CHAPTER 5. GEOGRAPHIC AREA DIRECTION

The Manti-La Sal National Forest includes several larger areas requiring different management, which cannot be met through the more general, forestwide plan components. These areas are identified as geographic areas. A geographic area represents an area where the location is unique and distinct and therefore requires distinct desired conditions and management components across a range of resources. Forestwide plan components are applied unless there is management direction for a specific geographic area that differs from the forestwide direction; in this case, direction for the geographic area takes precedence. Management direction for each geographic area is outlined in the sections that follow.

Horn Mountain and Wildcat Knolls Geographic Area

See Also

Wildlife, and At-Risk Animals.

Description and Values

This geographic area, shown in Appendix A, is located on the Manti Division of the Manti-La Sal National Forest, along the southeastern boundary. This corner of the forest provides a habitat that supports a unique assemblage and concentration of wildlife. The immediate areas in and around North and South Horn Mountains, as well as the Wildcat Knolls and Pines areas to the south, are home to the only known populations of greater sage grouse on the forest. These non-migratory populations are some of the most unique in Utah, utilizing sagebrush habitats over 8,000 feet in elevation throughout the year. The large stands of curl-leaf mahogany serve as a valuable cover and forage species for both Rocky Mountain elk and mule deer, sustaining the largest concentrations of wintering elk and deer found on the forest. This area will be managed with a primary emphasis on wildlife and the associated ecological conditions necessary to support this unique wildlife habitat.

While the intent of the geographic area is to protect its unique wildlife habitat, other resources can be found in the area, including several popular recreation sites and activities. Joe's Valley Reservoir and Straight Canyon provide popular fishing, camping, motorized recreation, and hiking opportunities. Joe's

Valley bouldering area, within Straight Canyon, has become nationally-renowned for the specialized type of rock climbing it provides. The Joe's Valley Dam and Reservoir was the principal component in the Emery County Reclamation Project constructed by the U.S. Bureau of Reclamation; encompassing over 1,100 acres, it is a high-quality tiger musky and splake fishery. Ferron Canyon to the south also winds through this geographic area and is a gateway to popular fisheries: Ferron Reservoir and Duck Fork Reservoir. Popular OHV trails within this area include Big Ridge, Hole Trail, Rock Canyon, Lords Trail, and Reeder Canyon Trail.

Emery County has communication towers located in two different areas within this geographic area; at Long Ridge and East Rim. Shared maintenance access to these towers is considered in direction for this geographic area.

Desired Conditions (GA-HORN-DC)

- 01** Phase proportions for pinyon-juniper woodlands are as shown in Table 12.

Table 12. Desired phase proportions for pinyon-juniper woodlands.

Phase	Maximum percent tree cover
1	Less than 33
2	33 to 66
3	Greater than 66

- 02** In occupied greater sage grouse seasonal habitat, shrublands are healthy and resilient, maintain habitat connectivity, and meet all greater sage-grouse life-cycle needs, including, but not limited to breeding, nesting, early and late brood-rearing, and winter needs.
- 03** In occupied greater sage grouse seasonal habitat, 70 percent or more of sagebrush communities have 10 to 30 percent sagebrush canopy cover, with less than 10 percent conifer canopy cover.
- 04** Within occupied greater sage grouse seasonal habitat, livestock grazing is managed to maintain healthy perennial grass and forb communities.
- 05** Big game wintering animals and key winter range habitat are not disturbed by motorized travel.
- 06** Habitat conditions provide the quality and spatial arrangement of forage, security, and cover for wintering Rocky Mountain elk and mule deer within key winter range.
- 07** Water developments meet all seasonal use period requirements for both greater sage grouse and big game.
- 08** Woodland vegetation types – including curl-leaf mountain mahogany, serviceberry, and Gambel oak – support a balanced range of structural stages, sizes, and ages to promote healthy big game winter ranges.
- 09** Recreation opportunities are compatible with big game and greater sage grouse habitat.

Objectives (GA-HORN-OB)

- 01** Treat a minimum of 1000 acres of woodlands or shrubland vegetation every 10 years.
- 02** Treat a minimum of 500 acres of curl-leaf mountain mahogany and serviceberry woodland every 10 years.
- 03** Stabilize, rehabilitate, close, or consider for addition to the trail system, a minimum of one non-system dispersed recreation route every ten years.

Standards (GA-HORN-ST)

- 01** Within occupied sage grouse seasonal habitat, prescribed fire shall not occur unless necessary to facilitate restoration of greater sage-grouse habitat, and then in only in a manner consistent with desired conditions.
- 02** New surface-disturbing and disruptive activities that generate noise at 10dB above the ambient baseline measured at the perimeter of an occupied lek shall not be authorized from March 1 to April 30, between (6 p.m. to 9 a.m.) during any calendar year.
- 03** New solar, wind, or energy development – except for on-site power generation associated with existing industrial infrastructure, such as, but not limited to, mine sites – shall not be authorized.
- 04** Within occupied sage grouse seasonal habitat, protective stipulations shall be required (e.g., noise, tall structure, guy wire removal, perch deterrent installation, etc.) when issuing new authorizations or during renewal, amendment, or reissuance of existing infrastructure permits (e.g., high-voltage transmission lines, major pipelines, roads, distribution lines, and communication tower sites).
- 05** Key winter range within this geographic area shall be managed as a winter non-motorized recreation opportunity spectrum class.

Guidelines (GA-HORN-GD)

- 01** To avoid disturbing big game on winter range habitat, management activities should not occur during the winter closure period of January 1 through April 15. If management activities must occur during the winter closure period, activities should be concentrated in time and space to reduce impacts on big game.
- 02** To improve or maintain big game, key winter range management actions should avoid altering curl-leaf mountain mahogany, serviceberry, and Gambel oak woodlands canopy cover components, unless to enhance a balanced range of structural stages, sizes, and ages for big game key winter range.
- 03** Authorization of energy or minerals activities and operations, including new leases within occupied greater sage grouse seasonal habitat, should include timing restrictions, as needed, to avoid or minimize disturbance and displacement of wildlife during sensitive times. (See Lease Stipulations appendix)
- 04** Management actions should avoid degradation of occupied sage-grouse seasonal habitat, subject to valid existing rights (minerals lease) and provide compensatory mitigation, subject to valid existing rights, when degradation of occupied greater sage grouse seasonal habitat is not avoidable. (See glossary for definition of compensatory mitigation)
- 05** Surface-disturbing and disruptive activities within occupied greater sage grouse breeding habitat should be avoided from (March 1 to June 15); if unavoidable, mitigation measures should be implemented.
- 06** The development of new, tall structures that have potential to disrupt breeding or nesting and create new perching or nesting opportunities for avian predators should be restricted within 2 miles of the perimeter of occupied leks.
- 07** Fences should not be constructed or reconstructed within 1.2 miles from the perimeter of occupied leks, unless the collision risk can be mitigated through design features or markings (e.g., mark, laydown fences, or other design features).

- 08 New permanent livestock facilities (e.g., windmills, water tanks, corrals, etc.) should not be constructed within 1.2 miles from the perimeter of occupied leks.
- 09 To avoid disturbing sage-grouse during breeding and nesting seasons, from March 1 to June 15, trailing livestock through breeding and nesting habitat should be minimized. Existing trails should be used unless they are unavailable, in which case specific routes and stopovers should be identified and agreed to by wildlife biologist before use.
- 10 To reduce the risk of habitat loss or disturbance, fuels treatments, prescribed fire, and sagebrush removal or manipulation should not occur unless these treatments reduce the risk of loss to wildlife or support attainment of the desired conditions for this geographic area.

Goals (GA-HORN-GL)

- 01 Partners, including Emery County, Utah Watershed Restoration Initiative, Southern Utah Fuel Company, Utah Division of Wildlife Resources, Rocky Mountain Elk Foundation, and Utah State University, work with the forest to coordinate, protect, restore, and enhance habitat for greater sage grouse and big game.
- 02 Engage with the state of Utah to ensure cross-boundary greater sage grouse habitat protections and connectivity, including working with the state recovery plan.

Maple Canyon Geographic Area

See Also

Recreation and Access.

Description and Values

This geographic area is unique due to the overlapping resources of both world-class sport-climbing and occupied breeding territory for golden eagles. Located just west of Moroni, Utah, in the San Pitch Mountains, Maple Canyon provides trails that immerse hikers in the unique cobblestone cliffs, as well as hundreds of rock-climbing opportunities, all accessed from a small, consistently-occupied 20-unit Forest Service campground. Day-use parking and overnight camping are limited by the narrow canyon topography and demand is often not met; this results in traffic congestion, parking along the road, and camping on private property below the forest boundary.

A breeding pair of golden eagles occupies a breeding territory within the canyon and maintains at least two alternate nests near recreational areas. Forest Service and volunteer nest surveys have confirmed successful fledging of chicks at one of these nests in previous years and voluntary avoidance of nearby crags has been observed by the climbing community.

Desired Conditions (GA-MAPLE-DC)

- 01 Maple Canyon provides world class sport-climbing opportunities and healthy, sustainable golden eagle habitat.
- 02 Moderate and simple amenities for day-use, parking, and overnight use for small (40 people or less) groups are provided and the development scale remains at this level.
- 03 The physical environment, scenic composition, recreational opportunities, and ecological values provide for quiet, reflective, and focused experiences.

- 04 Increased designated camping and parking capacity in and around the existing campground accommodates current and expected increases in recreation use.

Objectives (GA-MAPLE-OB)

- 01 Within five years of plan approval, update existing interpretive signage and provide additional educational and informational opportunities to climbers and other visitors.
- 02 Monitor non-system dispersed recreation routes every other year.
- 03 Every ten years, stabilize, rehabilitate, close, or consider for addition to the trail system, a minimum of one non-system, dispersed recreation route.
- 04 Conduct spring (March-April) golden eagle nest status surveys annually.

Standards (GA-MAPLE-ST)

- 01 Between May 16th and September 14th, only one recreation-event special use permit shall be issued per calendar month and will not overlap with non-commercial group use permits.
- 02 Climbing routes shall be closed within 400 meters of active golden eagle nests until there is confirmation that nestlings have fledged. Signs indicating the closure shall be placed at the climbing access points and the walls identified in the closure.

Guidelines (GA-MAPLE-GD)

- 01 To maintain opportunities for non-commercial public use, protect ecological resources and the quiet and reflective recreation experience, recreation special use permits (i.e. outfitter and guide, recreation event and non-commercial group use permits) should only be issued on weekends between September 15 and May 15. Permits may be issued for weekdays from May 16 to September 14, if the intended use will have a minimal impact on non-commercial recreation use patterns.

Goals (GA-MAPLE-GL)

- 01 As a result of partnerships, communications, and public outreach efforts by the Forest Service, HawkWatch Int, and Salt Lake Climbers Alliance, occupied golden eagle nesting sites are avoided by rock climbers.
- 02 Stewardship is shared with the climbing community to facilitate maintenance and monitoring of concentrated use areas, climbing access trails, and fixed anchors.

Moab Geographic Area

See Also

Community Water Sources, Recreation and Access, Riparian Management Zones, Livestock Grazing and Range Management, and Scenery Management.

Description and Values

This geographic area, shown on a map in Appendix A, is a unique location on the forest, where a sky-island ecosystem is adjacent to a highly-visited tourist destination. The towns of Moab and Castle Valley are dependent on the La Sal Mountains, located within this geographic area, for recharge of their sole-source aquifers and municipal water. Sustainable recreation and protection of scenery are additional management considerations for this area, due to the world-class recreation opportunities, distinct scenic composition, and the economic value of these assets to the tourism-oriented economy of the

Moab area. The highest-use nonmotorized trails on the forest are located within this area, including the popular Whole Enchilada trail. Mount Peale, the highest peak in the La Sal Mountains, also lies within this geographic area. It and the other peaks of the La Sal Mountains provide alpine habitat, above tree line, where multiple rare species occur, as do distinct high-elevation recreation opportunities. The combination of these unique values and their sensitivity to potential impacts makes specific direction to manage this location different from forest wide direction necessary.

Desired Conditions (GA-MOAB-DC)

- 01** The sole-source aquifers and their recharge are maintained as a healthy-functioning watershed to provide surrounding communities with a clean water source.
- 02** A diversity of recreational opportunities, including dispersed camping, is available without impacting the sole-source aquifers.
- 03** The scenic integrity of the west-slope La Sal Mountains continues to serve not only as a on-forest value, but also as a strong background scenic element, to complement adjacent federal and state land scenic compositions, as well as support local economies.
- 04** Old growth ponderosa pine occurs in suitable habitat as tree groups or single trees in uneven-aged patches or in small even-aged patches. Old growth features include old trees, snags, large logs, structural variability, and native vegetation understory.
- 05** Surface-resource impacts resulting from energy and mineral development do not have adverse long-term effects on ecosystem health or watershed conditions.
- 06** Human and pet waste does not impact the municipal water quality.

Objectives (GA-MOAB-OB)

- 01** Close all unauthorized motorized routes within the geographic area when they are found, on an annual basis.
- 02** Within ten years, designate and harden dispersed camping sites in the geographic area.
- 03** Within five years of official designation of dispersed campsites, the travel plan is updated to remove motorized access 150 feet off authorized roads after.
- 04** Within five years of plan approval, develop a visitor education plan for the geographic area.
- 05** Within five years of plan approval, assess all existing trail stream crossings within the geographic area to determine if they are contributing sediment to streams. If they are contributing unacceptable amounts of sediment to streams, trails will be rerouted or mitigated within five years of assessment.

Standards (GA-MOAB-ST)

- 01** To maintain in-basin water balances, no new trans-basin diversions of water from one watershed to another in headwaters of single-source aquifer recharge areas shall be allowed.
- 02** Commercial timber production shall not occur, but timber harvest may occur to benefit watershed health, aspen recruitment, emergency services, valid existing rights, administrative uses, or to build resistance and resilience to disturbance.
- 03** Dispersed camping shall be authorized only at officially-designated sites within roaded natural and semi-primitive motorized recreation opportunity spectrum classes.

- 04** Camping sites shall not be officially-designated within 100 feet of open water, unless the site can be hardened or otherwise mitigated.
- 05** Vegetation management actions shall not include chaining.
- 06** Applications for special-use permits associated with the development of a newly-issued water right, within the sole-source aquifer, shall not be authorized unless specifically for purposes of enhancing or improving characteristics that provide for water quality or quantity.
- 07** No new livestock water developments shall be permitted, unless to benefit the values of the geographic area. Existing livestock water infrastructure may be maintained or improved.
- 08** Only one recreation event special use permit shall be issued per year on the Whole Enchilada Trail Corridor.
- 09** Surface uses in extractive mineral and energy operations must be controlled through plans of operation and permits that provide for the long-term protection and sustainability of all affected resources.
- 10** A stipulation requiring human waste removal shall be included in all special use permits.

Guidelines (GA-MOAB-GD)

- 01** To maintain the highly-visible scenic character of the west face of the La Sal Mountains, analysis of meeting or exceeding scenic integrity objectives should include key observation points and views from adjacent National Park Service, Bureau of Land Management and state of Utah lands.
- 02** To maintain a healthy watershed, all new trails should be designed to avoid stream crossings or to include mitigation if crossing cannot be avoided.

Goals (GA-MOAB-GL)

- 01** Provide educational and interpretive information about the impacts, hazards, and associated mitigations of human and pet waste disposal within municipal water supply areas to forest users.
- 02** Work with Castle Valley and Moab municipal watershed stakeholders to evaluate and maintain the sole-source aquifer.
- 03** Continue to work with existing recreation partners and develop new partners to develop and promote sustainable recreation opportunities.

CHAPTER 6. FOREST PLAN MONITORING PROGRAM

Introduction

The monitoring program includes monitoring, or the collection of data and information, followed by the integration and evaluation of that information. Monitoring and evaluation are separate, sequential activities, required by the National Forest Management Act. Effective land management plan monitoring fosters adaptive management and more accurately informed decisions.

While the application of the monitoring herein is applicable to the Manti-La Sal National Forest, the data and information which the monitoring is sourced from maybe a different scale, including at the site level, or at the regional or national scale in addition to at the forest scale. For example, data regarding populations of wildlife may be sourced in part or whole from the states of Utah and Colorado, which therefore may include statewide information applied to inform about conditions on the Manti-La Sal National Forest. Monitoring may be the responsibility of the Forest Service, another agency, or may involve multiple agencies and organizations.

Monitoring provides feedback for the forest planning cycle by testing assumptions, tracking relevant conditions over time, measuring management effectiveness, and evaluating effects of management practices. Monitoring information should enable the forest to determine whether or not a change to the plan, management activities, or the monitoring program, or a new assessment, may be warranted based on the new information. This forms a basis for continual improvement and adaptive management. Direction for the monitoring and evaluation of forest plans is found under the 2012 planning rule at 36 Code of Federal Regulations 219.12 (United States of America, 2023) and in the directives at 1909.12 Chapter 30.

The forest plan monitoring program addresses critical components identified as providing for informed management of the forest's resources within the financial and technical capability of the agency. Every monitoring question links to one or more desired conditions, objectives, standards, or guidelines. However, not every plan component has a corresponding monitoring question.

The monitoring program is not intended to depict all monitoring, inventorying, and data gathering activities undertaken on the forest. Consideration and coordination with broad-scale monitoring strategies, multi-party monitoring collaboration, and cooperation with state agencies where practicable will increase efficiencies and help track changing conditions beyond the forest boundaries to improve the effectiveness of the plan monitoring program. In addition, project and activity monitoring may be used to gather information for the plan monitoring program if such monitoring provides relevant information to inform adaptive management. Monitoring also provides feedback to prioritize and improve the plan monitoring program.

The monitoring plan sets out the plan monitoring questions and associated indicators and measures. The forest used the best available scientific information in the development of the monitoring plan, considering expected budgets and agency protocols. The monitoring program will include a biennial monitoring evaluation report that will summarize the results of monitoring, evaluate the data, consider relevant information from broad-scale or other monitoring efforts, and make recommendations to the responsible official. The status of all monitoring questions will be reported biennially and only evaluated when new information is collected or available.

Required 2012 Planning Rule Monitoring Items

The Forest Service has the discretion to set the scope, scale, and priorities for plan monitoring within the financial and technical capabilities of the administrative unit. However, the monitoring plan must

include one or more monitoring question(s) and associated indicator(s) for the eight items set out in the 2012 Planning Rule at 36 CFR 219.12(a)(5) Each monitoring question responds to one or more of the following:

1. The status of select watershed conditions
2. The status of select ecological conditions (including key characteristics of terrestrial/aquatic ecosystems)
3. The status of focal species to assess ecological conditions
4. The status of select ecological conditions that contribute to the recovery of threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of species of conservation concern
5. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives
6. Measurable changes on the plan area related to climate change and other stressors
7. Progress toward meeting the desired conditions and objectives (including those for multiple uses)
8. The effects of management systems so that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C))

It is also necessary address the plan contributions to communities, the social and economic sustainability of communities, multiple use management in the plan area, and/or progress toward meeting the desired conditions and objectives related to social and economic sustainability (Forest Service Handbook 1909.12, chapter 30, section 32.13f).

Monitoring questions should focus on providing the information necessary to evaluate whether plan components are effective and appropriate and whether management is being effective in maintaining or achieving progress toward the desired conditions and objectives for the plan area. Indicators are quantitative or qualitative variables that can be measured or described and when observed periodically, show trends in conditions that are relevant to the associated monitoring questions. Monitoring questions and associated indicators may address more than one of these required topics.

Monitoring Questions by Resource

Watershed Conditions

Table 13. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select watershed conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-WATER-DC-02 FW-WATER-DC-03 FW-WATER-DC-05 FW-WATER-DC-08 FW-WATER-DC-09 FW-WATER-DC-12 FW-WATER-GD-04	MON-WATER-01: Are watershed characteristics and diversity sustained? Required items 1, 2 and 7.	In projects with streams, springs, or wetlands, with BMPs: <ul style="list-style-type: none"> • Number and types of BMPs implemented. • Trends towards natural range of variability for water quality and quantity based on BMPs post project actions. 	Forest Service monitoring
FW-WATER-OB-01	MON-WATER-02: Are watersheds functioning properly? Required items 1, 2 and 7.	<ul style="list-style-type: none"> • 12 indicators as described within the Watershed Condition Framework. • Number, type, and location of watershed restoration projects in priority watersheds • Number, type, and location of watershed restoration projects NOT in priority watersheds 	<ul style="list-style-type: none"> • Watershed Condition Framework • USFS Framework
FW-RMZ-OB-01 FW-WETLAND-DC-01 FW-WETLAND-OB-02	MON-WATER-03: How many acres of management actions implemented to restore riparian areas or associated wetlands are currently below proper functioning level? Required items 1, 2 and 7.	Acres or miles, types, and locations of management actions implemented in waterbodies and watershed that are currently below proper functioning levels.	Forest Service monitoring
FW-RMZ-DC-01 FW-RMZ-DC-02 FW-RMZ-DC-03 FW-RMZ-DC-04 FW-RMZ-DC-05 FW-RMZ-DC-06 FW-RMZ-DC-07 FW-RMZ-DC-08	MON-WATER-04: Are riparian management zones or perennial water systems being managed to desired condition or properly functioning condition? Required items 1, 2 and 7.	Miles of riparian zones or perennial water systems within greenline stability thresholds	Forest Service monitoring

FW-RMZ-DC-09			
FW-WATER-DC-02 FW-WATER-DC-08 FW-WETLAND-GD-01 FW-WETLAND-DC-07 FW-RISKANIMAL-DC-01 FW-RISKANIMAL-DC-05	MON-WATER-05: Are springs, developed and undeveloped, maintaining function and flows sufficient for wildlife and hydrologic needs? Required items 1, 2, 4 and 7.	<ul style="list-style-type: none"> • Water quantity retained at the source • Proper function condition rating of selected springs 	Forest Service monitoring

Air Quality

Table 14. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select air quality conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-AIR-DC-01 FW-AIR-DC-02 FW-AIR-DC-03 FW-AIR-DC-04	MON-AIR-01: What is the forest-wide status of National Ambient Air Quality Standards (NAAQS)? Required items 5, 6 and 7.	Air quality, forestwide, meeting National Ambient Air Quality Standards	National Ambient Air Quality Standards

Soil Resources

Table 15. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select soil resources conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-SOIL-DC-01 FW-SOIL-DC-02 FW-SOIL-DC-03	MON-SOIL-01: Are post management action disturbances maintaining or improving soil quality and productivity? Required items 2, 7 and 8.	In project areas: <ul style="list-style-type: none"> • Percent areal extent of detrimental soil disturbance • Tons per acre coarse woody debris • Percent soil erosion • Percent soil burn severity 	Forest Service monitoring
FW-VEGETATION-DC-04	MON-SOIL-02: Are ground cover values within the vegetation community types being maintained to provide for suitable soil stability and hydrologic function? Required items 1, 2, 7, and 8.	<ul style="list-style-type: none"> • Percent ground cover within each VCMQ type post management actions. • Percent ground cover within each VCMQ type forest-wide 	Long-term trend data

Geologic, Minerals, Energy, and Paleontological Resources

Table 16. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select geologic, minerals, energy, and paleontological conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-MINERALS-DC-02 FW-MINERALS-OB-01	MON-MINERALS-01: Are abandoned mine lands (AML) being reclaimed? Required items 2, 3, and 7.	<ul style="list-style-type: none"> • Number of features entered into abandoned mine lands (AML) database 	<ul style="list-style-type: none"> • abandoned mine lands database • Forest Service monitoring
FW-MINERALS-DC-01	MON-MINERALS-02: Are domestic energy needs supported and resources protected? Required item 7.	<ul style="list-style-type: none"> • Number of mitigation actions planned or completed • Number of coal, oil and gas, or uranium file code actions or letters issued • Permit stipulations violated • Number of reclamation areas in bad condition 	Forest Service monitoring
FW-GEOLOGY-DC-01 FW-GEOLOGY-DC-02	MON-MINERALS-03: Is the Forest available for geological and paleontological research? Required item 7.	<ul style="list-style-type: none"> • Number of geology or paleontology research applications for permit • Number of issued geology or paleontology permits 	Forest Service monitoring
FW-GEOLOGY-DC-03 FW-GEOLOGY-OB-01	MON-MINERALS-04: Have geologic hazards been identified or addressed? Required items 5 and 7.	<ul style="list-style-type: none"> • Number of cost share agreements entered for landslide mapping • Number of geologic hazards mitigated 	Unstable Slope Management Program (USMP)

Vegetation Communities and Resources

Table 17. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select vegetation communities and resource conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-VEGETATION-DC-01 FW-VEGETATION-DC-03 FW-WOODLAND-DC-01 FW-WOODLAND-DC-02 FW-WOODLAND-DC-03 FW-WOODLAND-DC-04	MON-VEGETATION-01: To what extent are vegetation communities trending toward desired conditions for vegetation structure and composition and resistance to future disturbances?	<ul style="list-style-type: none"> • Percentage of total acres forestwide and by vegetation type for each of these indicators: • vegetative structural stage distribution and • acres of vegetation management actions implemented 	<ul style="list-style-type: none"> • Forest Inventory Analysis (FIA) • FSveg • Vegetation Classification, Mapping, and Quantitative Inventory (VCMQ)

<p>FW-WOODLAND-DC-05 FW-WOODLAND-OB-01 FW-SHRUB-DC-01 FW-SHRUB-DC-03 FW-HERB-DC-01</p>	<p>Required items 2, 4, 6, 7, and 8.</p>		<ul style="list-style-type: none"> • Forest Service Activity Tracking System (FACTS)
<p>FW-VEGETATION-DC-01 FW-VEGETATION-DC-02 FW-CONIFER-DC-01 FW-CONIFER-DC-03 FW-CONIFER-OB-02 FW-DECIDUOUS-DC-01 FW-DECIDUOUS-DC-04 FW-WOODLAND-DC-01 FW-WOODLAND-DC-02 FW-WOODLAND-DC-03 FW-WOODLAND-DC-04 FW-WOODLAND-DC-05 FW-WOODLAND-OB-01</p>	<p>MON-VEGETATION-02: Are key characteristics of forest ecosystems, structure, composition, function, and disturbance regimes changing over time, and are they moving toward desired conditions?</p> <p>Required items 2, 4, 6, 7 and 8.</p>	<ul style="list-style-type: none"> • Acres of each forested vegetation community by condition class (VCC) • Acres treated in each forested vegetation community • Acres below maximum stand density index (SDI) 	<ul style="list-style-type: none"> • Vegetation Classification, Mapping, and Quantitative Inventory (VCMQ) • FSveg • Aerial Detection Surveys (ADS) • Landscape Fire and Resource Management Planning Tools (LANDFIRE) • Forest Inventory Analysis (FIA) • Ocular macroplot transects • Cover and composition data and long-term trend monitoring
<p>FW-CONIFER-DC-01 FW-CONIFER-OB-01 FW-CONIFER-OB-02 FW-CONIFER-OB-04 FW-DECIDUOUS-DC-06 FW-DECIDUOUS-DC-04 FW- DECIDUOUS -OB-02 FW-DECIDUOUS-GD-05 FW-DECIDUOUS-GD-06 FW-WOODLAND-DC-01 FW-WOODLAND-DC-03 FW-WOODLAND-OB-01 FW-SHRUB-DC-02 FW-SHRUB-DC-03 FW-SHRUB-OB-01 FW-HERB-DC-01 FW-HERB-OB-01 FW-RANGE-OB-02</p>	<p>MON-VEGETATION-03: Are vegetation communities, except those in alpine and sparse or non-vegetated communities, maintained for a healthy, productive, and diverse vegetation community?</p> <p>Required items 2, 6, 7 and 8.</p>	<ul style="list-style-type: none"> • Trends from the rangeland health condition assessment • Percent ground cover • Composition of plant species 	<ul style="list-style-type: none"> • Vegetation Classification, Mapping, and Quantitative Inventory (VCMQ) • Forest Service monitoring
<p>FW-VEGETATION-DC-03 FW-VEGETATION-DC-04</p>	<p>MON-VEGETATION-04: What is the status of the alpine ecosystem?</p>	<ul style="list-style-type: none"> • Percent ground cover and composition of plant species within the alpine community 	<p>Repeat photography</p>

FW-ALPINE-OB-01 FW-ALPINE-GD-01 FW-RISKPLANT-DC-01 FW-RISKPLANT-DC-03	Required items 2, 4, 6, 7 and 8.	<ul style="list-style-type: none"> • Soil temperature trend data • Population trends in frequency of occurrence of alpine inhabiting At-Risk species 	<ul style="list-style-type: none"> • La Sal Alpine Vegetation Monitoring • Global Observation Research Initiative in Alpine Environments (GLORIA) protocol • Forest Service monitoring
FW-DECIDUOUS-DC-01 FW-DECIDUOUS-OB-01 FW-DECIDUOUS-GD-04 FW-DECIDUOUS-GD-05 FW-DECIDUOUS-GD-06	MON-VEGETATION-05: Is the forest successfully regenerating aspen post management actions and wildfires? Required items 2, 4, 6, 7 and 8.	<ul style="list-style-type: none"> • Forest-wide acres of aspen type • Forest acres of aspen treated every 5 years 	<ul style="list-style-type: none"> • Vegetation Classification, Mapping, and Quantitative Inventory (VCMQ) • Forest Inventory Analysis (FIA) • FSVeg
FW-RISKPLANT-DC-01 FW-RISKPLANT-OB-02 FW-ALPINE-DC-01 FW-ALPINE-DC-02	MON-VEGETATION-06: Are ecological processes present and functioning in a manner that sustains ecological integrity and resiliency, and long-term persistence of at-risk species habitats? Required items 2, 4, 6, 7 and 8.	<ul style="list-style-type: none"> • Total ground cover within 85 percent of potential forest-wide • Percent of acres of plant species richness within range of variability • Acres of vegetation composed of the plant or tree species required for the at-risk species by resource values • Number of SCC plants with conservation strategy plans 	Forest service monitoring

Focal Species¹

Abert’s Squirrel

Abert’s squirrel has been selected as a focal species for monitoring to help assess stand conditions and the effectiveness of management actions in the mid- to late-seral ponderosa pine forested vegetation type. Abert’s squirrel is a ponderosa pine obligate and squirrel density is related to a suite of habitat components – including forest structure, tree density, canopy closure, cone production, and presence of mycorrhizal fungi populations (Pederson, 1976) – which represent important ecological processes that influence biodiversity and other forest species. Abert’s squirrel is therefore useful in assessing the effectiveness of ponderosa pine management and restoration activities (Dodd & Arizona Game and Fish Department Research Branch, 1998) and thus the overall health of stand conditions in mid- to late-seral ponderosa pine forested vegetation types on the Manti-La Sal National Forest. Abert’s squirrels occur only on the Moab and Monticello Districts and will thus only be an applicable focal species for these districts.

¹ Focal species. A small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Focal species would be commonly selected on the basis of their functional role in ecosystems. 36 CFR 219.19

Northern Goshawk

The northern goshawk has been selected as a focal species for monitoring to help assess the health, condition, and structure of forested vegetation types. Goshawks use mature deciduous (aspen) and conifer forests for nesting and foraging a diversity of wildlife prey species. They are generalist predators, preying on woodpeckers, Steller's jays, robins, and other medium-sized birds and small mammals. Indicators and measures that are assessed through monitoring for goshawks are therefore important for not only goshawks and their prey species but also for many other forest wildlife species.

Nesting habitat for goshawks is generally found in mature to old forest stands with a high density of large trees and high canopy closure relative to surrounding areas. While the availability of suitable nesting areas influences goshawk site occupancy, forest structural conditions across the larger landscape, which affect the abundance and accessibility of prey, have a greater effect on goshawk reproduction and survival (Reynolds et al 2006). Forest management that integrates the diverse habitat requirements of the goshawk prey community and supports a mosaic of habitat types is most likely to maintain the species across the landscape (Drennan, 2006).

Goshawk foraging habitat is generally characterized by moderate to high tree densities, open understories, and small openings. Optimal canopy closure percentages depend on forest type and structural stage (Reynolds et al., 1992). Other habitat components include snags, downed logs, and other woody debris. Location and connectivity are also important factors determining goshawk habitat use. Quaking aspen is one of the most important cover types supporting goshawks in Utah (Graham et al., 1999). Due to the importance of aspen habitat and the current condition of many late seral forest types (i.e., dense stands prone to insects, disease, and stand-replacing fire), forest management to restore degraded habitats and natural processes is required to conserve goshawks and their habitat (Graham et al., 1999).

Suitable goshawk habitat occurs across a diversity of landforms, forest cover types, and vegetation structural stages. Desired conditions for goshawk habitat are within the range of natural variability, with a composition of seral and structural stages that reflect a properly functioning condition and provide for long-term sustainability (Reynolds et al., 2006). Monitoring these top-level forest predators will help to show whether we are meeting these objectives on a landscape scale. Forest management that stresses proper functioning condition, the importance of large trees, and maintaining natural processes including fire will maintain habitat to support goshawks, their prey, and other forest-dependent wildlife species.

Wildlife Resources

Table 18. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select wildlife resource conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-WILDLIFE-DC-05 FW-WILDLIFE-GL-02	MON-WILDLIFE-01: Are migratory birds present in associated habitats, specifically birds of conservation concern?	Presence, density, and occupancy estimates for migratory birds	Intermountain Bird Conservancy of the Rockies monitoring

	<p><i>*To comply with: The Migratory Bird Treaty Act of 1918 (MBTA), codified at 16 U.S.C. §§ 703–712</i></p> <p>Required items 2, 3, 4, 7, and 8.</p>		
<p>FW-WILDLIFE-DC-09 FW-WILDLIFE-GD-02 GA-MAPLE-DC-01 GA-MAPLE-OB-04</p>	<p>MON-WILDLIFE-02: Are potential disturbances to forest raptors within suitable habitats minimized when forest management actions are undertaken? <i>*To comply with: Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)</i></p> <p>Required items 2, 4, 7, and 8.</p>	<ul style="list-style-type: none"> • Nest status and condition monitoring of 25 percent or more of known raptor nests • Within management action areas, signs of cliff failure within 0.5 mile of any known cliff nesting raptor such as golden eagle, peregrine falcon, and prairie falcon. golden eagle. 	<p>Forest Service monitoring</p>
<p>FW-WILDLIFE-DC-06 FW-WILDLIFE-GD-02</p>	<p>MON-WILDLIFE-03: Are benefits to wildlife being evaluated during and after reclamation of abandoned mines?</p> <p>Required items 2, 3, and 7.</p>	<ul style="list-style-type: none"> • Number of features entered into abandoned mine lands (AML) database • Presence of bats at proposed abandoned mine sites. 	<ul style="list-style-type: none"> • abandoned mine lands database • Forest Service monitoring
<p>FW-CONIFER-OB-01 FW-CONIFER-GD-05 FW-WILDLIFE-DC-08</p>	<p>MON-WILDLIFE-04: Is the forest maintaining suitable ponderosa pine habitat for wildlife dependent on this vegetation community after vegetation management actions in ponderosa pine forest?</p>	<ul style="list-style-type: none"> • Abert’s squirrel¹ density per hectare at already established monitoring sites. • Canopy cover of ponderosa pine post vegetation management action 	<p>Forest Service monitoring</p>
<p>FW-CONIFER-DC-04 FW-CONIFER-DC-05 FW-CONIFER-DC-06 FW-SPARSE-DC-01 FW-WILDLIFE-DC-09 FW-WILDLIFE-ST-07</p>	<p>MON-WILDLIFE-05: Is the forest maintaining necessary habitat components for forest dependent wildlife?</p> <p>Required items 2, 4, 6, 7 and 8.</p>	<ul style="list-style-type: none"> • Number of occupied northern goshawks¹ territories and vegetation communities occupied • Snags per acre forest-wide • Downed logs or coarse woody debris forest-wide • Aspen regeneration (stems/ha) in northern goshawk territories • Success or failure status of known northern goshawk nests within suitable habitat. • Number of historic northern goshawk territories occupied within areas where management actions have occurred. 	<ul style="list-style-type: none"> • Vegetation Classification, Mapping, and Quantitative Inventory (VCMQ) • Forest Inventory Analysis (FIA) • Common Stand Exam (CSE) • Aerial Detection Survey (ADS) • Forest Service monitoring

<p>FW-RISKANIMAL-DC-01</p>	<p>MON-WILDLIFE-06: Are aquatic and terrestrial at-risk animal species persisting and protected during and after management actions such that their populations are maintained, and their habitats occupied?</p> <p>Required items 2, 4, 7, and 8.</p>	<ul style="list-style-type: none"> • Number of Townsend’s big-eared bats and fringed myotis • Number of egg strands, tadpoles and adult boreal toads • Species specific monitoring protocols such as: <ul style="list-style-type: none"> ○ Bank stability ○ Water temp ○ PFC rating of selected streams ○ Miles of stream occupied by fish ○ Acres treated or impacted by fire in Mexican Spotted Owl designated critical habitat ○ Vegetation stand structure ratios in Mexican Spotted Owl designated critical habitat 	<ul style="list-style-type: none"> • Forest Service monitoring • Aquatic AIM
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¹ Abert’s squirrel and Northern goshawks are focal species.

Cultural and Heritage Resources and Areas of Tribal Interest

Table 19. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select cultural and heritage resource and areas of Tribal interest conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
<p>FW-CULTURAL-DC-01 FW-CULTURAL-DC-02 FW-CULTURAL-OB-04</p>	<p>MON-CULTURAL-01: What is the progress toward preservation and conservation of significant cultural resources?</p> <p>Required items 7, and 8.</p>	<ul style="list-style-type: none"> • Number of new sites recorded • Number of previously recorded sites evaluated for National Register eligibility • Number of public education events about forest history • Number of sites monitored for condition • Number of volunteer projects • Number of damage assessments for Archeological Resources Protection Act (ARPA) violations 	<p>Natural Resource Manager (NRM)</p>
<p>FW-TRIBAL-OB-02 FW-CULTURAL-DC-04</p>	<p>MON-CULTURAL-02: What opportunities for Nation, Tribe, and Pueblo engagement session have occurred?</p>	<p>Number of engagements with Nations, Tribes, and Pueblos</p>	<p>Natural Resource Manager (NRM)</p>

	Required items 5, 7, and 8.		
FW-TRIBAL-GD-06 FW-CULTURAL-DC-01 FW-CULTURAL-DC-03	MON-CULTURAL-03: Is the condition of cultural sites being adversely impacted by management actions as well as visitation impacts. Required items 5, 7, and 8.	Number of incidences of adverse impacts	Forest Service monitoring

Recreation, Scenery, Education and Access Resources

Table 20. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select recreation and access conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-REC-DC-01 FW-REC-DC-02 FW-REC-DC-04 FW-REC-OB-01 FW-ROS-DC-01 FW-ROS-DC-02 FW-ROS-DC-03 FW-ROS-DC-04 FW-WINTER-DC-01 FW-ACCESS-DC-01 FW-ACCESS-DC-02 FW-ACCESS-DC-03 FW-ACCESS-DC-04 FW-ACCESS-DC-07 FW-ACCESS-DC-08 FW-ACCESS-DC-09 FW-FACILITY-DC-01 FW-FACILITY-GD-01	MON-REC-01: What is the status, trends and conditions of recreational opportunities, facilities, trails, and visitor satisfaction levels on the Manti-La Sal National Forest? Satisfaction for accessibility, sustainability, and maintenance considerations is emphasized. Required items 5, 7, and 8.	<ul style="list-style-type: none"> • Visitor use numbers and trends • Changes in recreation trends in visitor measured satisfaction levels • Number of satisfactory developed recreation condition surveys across the Forest • Budgetary trends for maintenance costs • Numbers of complaints about accessibility concerns. • Numbers of trails with maintained to standard or higher ratings. • Number of roads and trails to standard • Public use levels and satisfaction level trends • Number of illegal routes identified 	<ul style="list-style-type: none"> • Manti-La Sal National Visitor Use Monitoring (NVUM) • Review State of Outdoor Recreation in Utah Report • Developed Recreation Condition Surveys • Real Property Inventories • Trail Assessment Conditions Surveys (TRACS) • Condition surveys from Region 4 Roads Random Sample • Motor Vehicle Use Map (MVUM) and travel management actions • Sign Inventory Surveys
FW-REC-DC-03 FW-REC-DC-04	MON-REC-02: What is the status, trends, and conditions of dispersed camping sites across the Forest? Required items 5, 7, and 8.	<ul style="list-style-type: none"> • Visitor use numbers and trends • Changes in recreation trends in visitor measured satisfaction levels for dispersed sites • Changes in conditions of undeveloped dispersed sites 	<ul style="list-style-type: none"> • Manti-La Sal National Visitor Use Monitoring (NVUM) • Dispersed camping inventory data

		<ul style="list-style-type: none"> • Number of available designated dispersed sites in areas where designation has occurred 	
<p>FW-ROS-DC-01 FW-ROS-DC-02 FW-WINTER-DC-01 FW-ACCESS-DC-01 FW-ACCESS-DC-04 FW-ACCESS-DC-07 FW-ACCESS-OB-04 FW-ACCESS-GL-01 FW-ACCESS-GL-02 FW-ACCESS-GL-03</p>	<p>MON-REC-03: Have management actions improved or maintained identified summer and winter motorized recreation opportunities?</p> <p>Required items 5, 7, and 8.</p>	<ul style="list-style-type: none"> • Number of management actions that have moved existing conditions towards or achieved the assigned recreation opportunity spectrum (ROS) classes for both summer and winter ROS. • Number and type of actions that have hindered winter recreation opportunities. • Number and type of actions that have improved or maintained winter recreation opportunities? • Number of roads and trails maintained to standard that provide access to developed facilities or other points of interest. • Changes in use levels within recreation opportunity spectrum (ROS) classes 	Forest Service monitoring
<p>FW-SCENERY-DC-01 FW-SCENERY-DC-02 FW-SCENERY-DC-05 FW-SCENERY-DC-09</p>	<p>MON-SCENERY-01: What improvements to the scenic character of the forest have occurred?</p> <p>Required items 5, 6, 7, and 8.</p>	<ul style="list-style-type: none"> • Number of acres moving toward, meeting or exceeding scenic integrity objectives 	Forest Service monitoring
<p>DA-PINHOOK-DC-02 DA-PINHOOK-OB-04</p>	<p>MON-PINHOOK-01: Are interpretive panels and sites maintained or improved?</p> <p>Required items 5 and 7.</p>	<ul style="list-style-type: none"> • Documented conditions of known interpretive sites including but not limited to Pinhook Battlefield, Bull Canyon Overlook, and the Scenic Byway. 	Forest Service monitoring
<p>DA-GBS-DC-02 DA-GBS-OB-04 FW-EDUC-DC-01 FW-EDUC-DC-02 FW-EDUC-DC-03 FW-EDUC-DC-04</p>	<p>MON-GBS-01: What opportunities for educational or interpretive programming are available?</p> <p>Required items 5 and 7.</p>	<ul style="list-style-type: none"> • Number of interpretive and informational opportunities provided and maintained • Number of educational opportunities occurring at the Great Basin Station annually 	Forest Service monitoring

Land Ownership and Land Special Uses

Table 21. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select lands conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-LAND-DC-08 FW-LAND-DC-09 FW-LAND-DC-11 FW-LANDSUP-DC-03 FW-LANDSUP-DC-04	MON-LAND-01: Are lands special use permits being managed to meet desired conditions and objectives? <i>*To comply with 36 CFR 251(b)</i> Required items 5, 7, and 8.	Number of permits administered to standard	Natural Resource Manager (NRM)
FW-LAND-DC-01	MON-LAND-02: Are land adjustments including conveyance, purchase, and donation, improving the national forest ownership pattern to increase management efficiency? <i>*To comply with 36 CFR 254</i> Required items 5, 7, and 8.	Number of acres conveyed or purchased.	Land adjustments tracking

Fire and Fuels Management

Table 22. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select fire and fuels conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-FIRE-DC-02 FW-FIRE-DC-03 FW-FIRE-DC-04 FW-FIRE-OB-01 FW-FIRE-GD-03	MON-FIRE-01: Is the frequency and severity of wildland fire within the historic fire disturbance regimes? Required items 2, 4, 6, 7, and 8.	<ul style="list-style-type: none"> • Acres burned by wildfire and prescribed fire • Acres burned by fire regime group • Acres burned by fire regime interval • Acres burned by vegetation condition class • Acres burned by vegetation departure 	<ul style="list-style-type: none"> • Landscape Fire and Resource Management Planning Tools (LANDFIRE) • Forest Service Activity Tracking System (FACTS)
FW-FIRE-DC-05 FW-FIRE-OB-03 FW-FIRE-GD-07 FW-FIRE-GD-08	MON-FIRE-02: Are fuel treatments helping to protect highly valued resources or assets and assisting with control or management of fires? Required items 2, 4, 6, 7, and 8.	<ul style="list-style-type: none"> • Acres effectively treated • Acres of fuel treatments that protect highly valued resources 	<ul style="list-style-type: none"> • Interagency Fuel Treatment Decision Support System (IFTDSS) Fuel Treatment Effectiveness report • Forest Service Activity Tacking System (FACTS)

Livestock Grazing and Range Management

Table 23. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select livestock grazing and range conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-RANGE-DC-01	MON-RANGE-01: Are livestock grazing permits and allotments being managed to meet or move toward desired conditions? Required items 1, 2, 6, 7, and 8.	End of year allotment or pasture utilization	Natural Resource Manager (NRM)
FW-RANGE-OB-03	MON-RANGE-02: Is rangeland infrastructure maintained or improved? Required items 1, 2, 7, and 8.	Percentage of range infrastructure improved or maintained	Natural Resource Manager (NRM)

Economics

Table 24. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select economic conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
FW-RANGE-DC-01 FW-TIMBER-OB-01 FW-RECSUP-DC-01 FW-RECSUP-OB-01 DA-WILD-DC-08 MA-RECWILD-DC-06	MON-ECON-01: Is the forest meeting the needs of the local economies and industries? Required items 5, 7, and 8.	<ul style="list-style-type: none"> • Timber volume sold annually by product class • Level of grazing by head months (HMs) • Number, type, and location of special use permits for recreation events and outfitters and guides 	<ul style="list-style-type: none"> • Timber Information Manager (TIM) in hundred cubic feet (CCF) on the Periodic Timber Sale Announcement report (PTSAR) • Special Use Permit data and end of year reports. • 2013 Needs Assessment and Resource Capability Guidance • End of Year Use Reports
FW-TIMBER-DC 03 FW-TIMBER-OB 01	MON-ECON-02: What is the quantity of wood products sold by the Forest? Required items 5, 7, and 8.	<ul style="list-style-type: none"> • Timber sale quantity, products that meet utilization standards, in MMBF and MMCF • Wood sale quantity or all wood products including firewood, biomass, post and poles, and non-saw material, in MMBF and MMCF 	<ul style="list-style-type: none"> • Timber Information Manager (TIM) in hundred cubic feet (CCF) on the Periodic Timber Sale Announcement report (PTSAR)

Designated Area Management

Table 25. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select designated area management conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
DA-WILD-DC-01 DA-WILD-DC-03 DA-WILD-DC-04 DA-WILD-DC-05 DA-WILD-DC-06 DA-WILD-DC-10 DA-WILD-OB-01	MON-WILD-01: What is the status, conditions, use trends and public satisfaction levels in the Forest's designated Wilderness areas? Required items 5, 7, and 8.	Wilderness character conditions Conditions of existing and new dispersed camping sites Use numbers and satisfaction levels from National Visitor Use Monitoring (NVUM) surveys	<ul style="list-style-type: none"> • Wilderness Stewardship Elements • Campsite inventories • Solitude Monitoring
DA-RNA-DC-01 DA-RNA-DC-03	MON-RNA-01: Are RNAs maintaining the natural conditions and values for which they were established?	Conditions and trends of natural conditions and values	<ul style="list-style-type: none"> • Basic Stewardship Monitoring Form

	Required items 2, 3, 4, 6, 7, and 8.		
DA-LEWIS-DC-01 DA-LEWIS-DC-03 DA-LEWIS-DC-04	MON-LEWIS-01: Do riparian species dominate the Mont E. Lewis botanical area? Required items 2, 3, 4, 6, 7, and 8.	Percent of botanical area dominated by obligative and facultative wetland species	<ul style="list-style-type: none"> • Historic data including designation data and forest plan revision assessment data
DA-IRA-DC-01	MON-IRA-01: What is status, conditions and trends associated with Inventoried Roadless Areas across the Forest? Required items 1, 2, 3, 4, 6, 7, and 8.	Number of unauthorized motorized and mechanized incursions into IRAs	<ul style="list-style-type: none"> • Travel management compliance and patrols data

Management Area Management

Table 26. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select management area management conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
MA-RECWILD-DC-02 MA-RECWILD-OB-04	MON-RECWILD-01: Do management activities in recommended wilderness areas maintain and protect the ecological and social characteristics that provide the basis for wilderness recommendation? Required items 5, 7, and 8.	<ul style="list-style-type: none"> • Number, kind, and extent of vegetation treatments (including prescribed fire) that has occurred in recommended wilderness • Number of reported social conflicts and resource damage incidents within recommended wilderness • Number of unauthorized incursions reclaimed or mitigated in the area • Number and condition of dispersed campsites in the area • Ratings for sense of solitude from visitors 	<ul style="list-style-type: none"> • Forest Service monitoring • Manti-La Sal National Visitor Use Monitoring (NVUM)
MA-WSR-DC-01	MON-WSR-01: Is the wild and scenic river maintained to be potentially included in the National system? Required items 5, 7, and 8.	<ul style="list-style-type: none"> • Number, kind, and extent of management actions within the Wild and Scenic River (WSR) corridor • preliminary classification, free-flowing status, and outstandingly remarkable values maintenance 	Forest Service monitoring

Geographic Area Management

Table 27. Plan monitoring questions, relevant plan components, indicators, data source and reporting frequency to evaluate select geographic area management conditions.

Plan Components	Question	Indicator(s) and Measure(s)	Data Source
GA-MOAB-DC-01 GA-MOAB-OB-01 GA-MOAB-OB-05 GA-MOAB-OB-06	MON-MOAB-01: Is the Moab Geographic Area managed to meet, exceed, or move towards desired conditions and objectives? Required items 1, 2, 5, 7, and 8.	<ul style="list-style-type: none"> • Number, of unauthorized routes found and addressed within the geographic area • Are sub-watersheds within the sole-source aquifers rated as functioning according to the Watershed Condition Framework. • Number of streams within the sole-source aquifer watersheds that are being provided sediment via anthropogenic factors. 	Forest Service monitoring

<p>GA-HORN-DC-02 GA-HORN-DC-05 GA-HORN-DC-09 GA-HORN-OB-01 GA-HORN-GL-01</p>	<p>MON-HORN-01: Is habitat for and populations of greater sage grouse maintained or enhanced?</p> <p>Required items 1, 2, 3, 4, 7, and 8.</p>	<ul style="list-style-type: none"> • Number of greater sage grouse males present during annual spring lek counts • Trends and conditions related to the sage grouse management plan measures including: <ul style="list-style-type: none"> ○ Lek security ○ Proximity of trees ○ Proximity of sagebrush to leks ○ Sagebrush height ○ Sagebrush canopy cover ○ Perennial grass height ○ Perennial forb canopy cover ○ Upland and riparian perennial forb availability • Number of non-system dispersed recreation routes within the geographic area 	<ul style="list-style-type: none"> • Most recent interagency sage grouse management plan • Forest Service monitoring
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CHAPTER 7. MANAGEMENT APPROACHES

This chapter describes potential management strategies and approaches that the Manti-La Sal National Forest may undertake to make progress in achieving desired conditions and objectives. Management approaches and strategies presented here may include suggestions for on-the-ground implementation, analysis, assessment, inventory, or monitoring, as well as partnership and coordination opportunities. However, no estimates regarding the specific amount or treatment types, frequency, location, magnitude, or numbers of actions during the life of the plan are included. The potential strategies and approaches are not all-inclusive, nor are they commitments to perform actions. Management approaches are not required by the 2012 Planning Rule. The potential management approaches may be used to inform future proposed and possible actions. These strategies and actions provide guidance for plan implementation and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all resources have identified management approaches. Only those resources where strategies and priorities were identified are included in this document. These management approaches are not plan components nor do they take precedence over any plan components. Under an adaptive management approach, proposed strategies and actions are dynamic. They are changeable, augmentable, and replaceable in order to be responsive to the results of new research, practical experience, and other information and observations.

As explained above, this chapter does not commit the Manti-La Sal National Forest to perform or permit activities, but rather provides descriptions of actions that would likely be consistent with plan components. Information included does not direct or compel processes such as analysis, assessment, consultation, planning, inventory, or monitoring. A plan amendment is not required to change or modify ... any of these potential management approaches. The list of approaches can be updated at any time through an administrative correction of the plan. More information regarding optional plan content, including management approaches, may be found under 36 CFR 219.7(f)(2).

Watershed and Aquatic Resources

- Incorporate multiple resource values, including water, soil, and aquatic and riparian ecosystems, while supporting continued use by wildlife, livestock, recreation, communities, and irrigation users.
- Prioritize minimizing the disturbance of streams by using techniques such as buffering watercourses from management activities, increasing coarse woody debris in channels to capture sediment, and changing stream channel gradients to address sediment sources at stream crossings.
- Consider sediment impacts when authorizing all management activities and permitting activities.
- Allow beaver activity along streams while managing potential impacts to existing infrastructure.
- Prioritize vegetation and watershed management activities in riparian areas that face the most risk from large-scale, high-severity fire and past fire exclusion or accelerated flooding events.
- Use the Watershed Condition Framework to identify watersheds at risk and prioritize those for restoration activities and projects.
- Use the best available scientific information to interpret data and develop better watershed management practices.
- Review and adapt management techniques as data about watershed conditions becomes available.
- Focus monitoring on understanding both ground and surface water connectivity, and the natural range of variability, of their flows and chemistry.

Community Water Sources

- Prioritize producing water and the protection of municipal and community water infrastructure.
- Prioritize watershed and water supply where and when resource management conflicts occur.
- Promote land use activities that do not degrade the water quality or disrupt the water source area.
- Emphasize vegetation treatments that promote long-term development and maintenance of multi-age stands.
- Promote actions to improve watershed conditions, including rehabilitating areas to reduce erosion and sedimentation delivery to waterbodies, improving 303(d) listed streams, and other passive or active restoration efforts.

Riparian Management Zones

- Emphasize management and monitoring in riparian areas that face the most risk from large-scale, high-severity fire; have experienced past fire exclusion; or are at risk from accelerated flood events associated with climate change, mass wasting, ungulate grazing, recreation, or other disturbances.
- Consider the following techniques to restore riparian management zone aquatic habitats: invasive species treatment, noxious weed treatment, increasing pool quantity, providing stream cover, and improving fish passage.

Air Quality

- Focus on establishing strategies to ensure that management activities do not cause or contribute to violations of the standards in nonattainment areas.
- Prioritize working with federal, state, and tribal partners to monitor smoke impacts. This may include installing air quality monitoring equipment, as needed, to provide air quality information and messaging to the public and regulatory agencies.

Geologic and Paleontological Resources

- Prioritize use of and updates to the Forest Landslide Risk Model. This model identifies geologic hazards, such as landslides, floods, and sinkholes, and the associated risks to public health, safety, facilities, and infrastructure.

Climate Adaptation

- Consider the adaption strategies and approaches described in Chapter 14 of the Intermountain Adaption Partnership vulnerability assessment, "Climate change vulnerability and adaptation in the Intermountain Region" (Halofsky et al. 2018) in developing and designing projects and activities for resource management on the Manti-La Sal National Forest.
- Consider the potential impact that a changing climate may have on ecosystems during project analysis.
- Prioritize increasing resilience and resistance in ecosystems that have been identified as having the highest sensitivity and the least adaptive capacity to climate change.
- Promote landscape connectivity.
- Prioritize creation of refugia across forest ecosystems.

Vegetation Communities and Resources

- Focus on creating and maintaining conditions that promote native plants and animals, forage production, wood products, scenic quality, and ecosystem functionality.
- Emphasize restoring and maintaining a diversity of age classes in forested stands.
- Reduce fire hazards and improve flexibility for appropriate fire management responses.
- Increase resilience to insects, diseases, and climate change.
- Facilitate adaptation of ecosystems to future threats to biodiversity.
- Maintain and provide habitat components for wildlife, as well as for raptor breeding, nesting, and migration, particularly for golden eagles and northern goshawk across the larger landscape.
- Maintain resilient vegetation communities, including aspen stands, that produce quality forage, browse, and cover to support the needs of livestock and wildlife.
- Use the most up-to-date version of the Forest's Properly Functioning Condition document to establish desired stand structure and canopy cover.

Coniferous Forest

- Focus silvicultural treatments, vegetation manipulation, and wildfire on maintaining and restoring the appropriate fire regime group and enhancing all vegetation-dependent resources, including wildlife habitat for species associated with fire-adapted systems.
- Capitalize on both naturally-occurring and management-driven disturbance events, including fire, insects and disease, and mechanical treatments, to restore and maintain mosaic habitat structure, vegetation composition, and natural processes.
- Retain old growth across the landscape, recognizing that the location of old growth may shift across the landscape over time as a result of succession and disturbance.
- Focus on designing projects to increase coarse woody debris if stands do not currently meet desired levels.
- Prioritize vegetation management projects that maintain or improve ponderosa pine old growth characteristics.
- Follow the Fire Regime Condition Class table and map when designing projects.

Deciduous Forest

- Focus management to ensure that the structure, function, and distribution of aspen are within the natural range of variation. Additionally, manage to achieve a wide age and size distribution of aspen.
- Manage aspen stands to provide not only productive understories but also wood fiber.
- Consider using fire to re-set successional processes in upland aspen mixed with conifer stands to create complex vegetation mosaics of aspen and conifers.
- Focus management of aspen on increasing suckering and reducing seedling consumption by wildlife and livestock.
- Consider low levels of regeneration, especially for older stands where canopy cover is less than 40 percent, as potential indications that stands are not self-replacing.
- Focus not only on abundant regeneration, but also on evidence of adequate recruitment, when determining if a stand is self-replacing and healthy.
- Prioritize restoration activities with a landscape-scale goal of creating conditions that support a balance of species and successional stages to create broader resilience to a variety of potential disturbances.
- Recognize that aspen clones may successfully regenerate by either catastrophic, continual, episodic, or fine-scale gap phase regeneration modes (Kurz et al., 2007).

- Follow the Fire Regime Condition Class table and map when designing projects.

Woodlands

- Prioritize reducing stand density to increase understory vegetation species diversity and reduce competition for nutrients.
- Focus treatment in areas with valuable habitat and forage and important watershed characteristics.
- Emphasize pinyon and juniper tree removal to break up large, contiguous stands, potentially reducing the size of wildfires.
- Prioritize treatments that retain a component of mature seed-producing shrubs, especially in the Gambel oak and mountain shrubland mixed community. Also focus on stimulating sprouting with fire or mechanical cutting.
- Actively manage and prioritize funding for degraded pinyon and juniper stands.
- Use the latest research, including imagery, state and transition models, and tree dominance indices, to develop and prioritize pinyon-juniper management projects and to determine best methods for treatments and post-disturbance recovery.
- Consider making material resulting from vegetation management actions available to local communities, including tribal members, to provide a source of fuel and material for posts.
- Prioritize treatment and monitoring for those areas that are ecologically at risk and where the probability of success and benefits can be maximized, given existing budgets and workloads.
- Follow the Fire Regime Condition Class table and map when designing projects.

Shrublands

- Focus on retention and enhancement of a vigorous understory community of native grasses and forbs in areas where biological soil crusts are not present.
- Prioritize management actions in historical shrubland communities and areas being converted to pinyon/juniper due to fire suppression.
- Avoid management actions that may create monocultures of cheat grass or other introduced annual grasses.
- Consider management actions to support wildlife habitat and forage production for livestock.
- Follow the Fire Regime Condition Class table and map when designing projects.

Herblands

- Focus restoration of degraded herblands on improving vegetation cover, diversity, and forage production for wildlife and livestock, while minimizing the threat of noxious and invasive plants.
- Restoration techniques should use the best available science, including appropriate seed mixes.
- Focus herbland management on supporting forage production for wildlife and livestock.
- Follow the Fire Regime Condition Class table and map when designing projects.

Alpine Communities

- Promote retention of healthy alpine habitat through recreation management, reclamation, and other management activities.

Sparse or Non-Vegetated

- Focus management on human impacts, including recreation.

- Emphasize mitigation measures and project designs that protect soil health, as well as the wildlife and plants who depend on these bare and sparsely vegetated areas.

Native Plant Materials

- Anticipate plant material needs for emergency and planned revegetation. Develop core plant lists, menu-based seed mixes by community type, planting guidelines, plant material sources, seed caches, and seed storage facilities.
- Identify seed needs and ensure the reliable availability of genetically-appropriate seed, including advancing the availability and use of sage grouse- and pollinator-friendly seed mixes in land management, restoration, and rehabilitation actions.
- Identify and support research needs that seek to provide genetically-appropriate seed and to improve the technology for native seed production and ecosystem restoration.
- Develop tools that enable managers to make timely, informed seeding decisions for burned area recovery and ecological restoration.

Noxious Weeds and Invasive Species

- Eliminate the establishment or spread of noxious weed species and emphasize prevention, treatment, and rehabilitation of high-priority ecosystems for at-risk species.
- Focus management on protecting infestation-free areas from invasive species.
- Emphasize prevention and early detection and rapid response with appropriate eradication tools for new infestations, with repeat site visits annually.
- Use all tools available for the prevention and treatment of noxious and invasive weed infestation, including, but not limited to herbicide, manual, mechanical, and biological treatments, along with targeted grazing.
- Focus on creating an integrated forest management approach – with respect to strategy, funding, and implementation – across resources and with partners outside the agency. This approach should enhance awareness and education, pool resources, streamline treatment strategies, expand surveys, inventories, and monitoring, and implement new and adaptive treatment methods.
- Reference the states of Utah’s and Colorado’s Noxious Weed classification lists as guidance on preventing the spread and decreasing infestations of listed noxious weeds and other priority invasive species on forest lands.

Pollinators

- Prioritize projects that maintain or improve pollinator habitat.
- Consider using locally-appropriate, pollinator-friendly species mixes when selecting project seed mixes.
- Consider including the creation or maintenance of pollinator habitat in project rationale.
- When using insecticide, consider and mitigate impacts on pollinating insects to the greatest extent possible.
- Capitalize on disturbance events, including, but not limited to, fires and right-of-way maintenance, to support pollinator species by using, when and where feasible, native seed mixes that include forb species.

At-Risk Plants

- Emphasize monitoring of identified at-risk plant species locations and population trends and documenting these species' range, status, and threats.

Wildlife

- Prioritize maintenance and enhancement of existing wildlife habitat that is diverse and healthy.
- Promote habitat and population connectivity to support species movement across the landscape.
- Emphasize providing appropriate habitat and ecological conditions to maintain a diversity of animal communities and support persistence of native species across the forest.
- Consider what habitat types will be affected when determining what species surveys to conduct.
- Consider the contribution of desirable nonnative fish and wildlife species to the social and economic benefit of local and adjacent communities by providing recreation opportunities, including wildlife viewing, fishing, and hunting, when assessing the retention or elimination of species.

At-Risk Animals

- Support forage production for wildlife and livestock and vegetation treatments that enhance or maintain habitat for at-risk animal species.
- Prioritize treating non-native, invasive species and reseedling using appropriate seed mixes in habitats for at-risk animal species.
- Prioritize use of adaptive management, using the results of multiple-indicator monitoring, to determine the appropriate criteria for bank alteration, as riparian health is an important factor in maintaining the viability of aquatic at-risk animal species.
- Emphasize management actions that provide habitat for the recovery of at-risk animal species, as well as for the maintenance of viable populations of species of conservation concern.
- Focus on protections for at-risk animal species' habitat and populations early in the environmental planning process.
- Where the Forest Service has entered into a signed conservation agreement that provides guidance on activities or actions to be carried out by the forest, those activities or actions should be undertaken consistent with the guidance found in the conservation agreement.

Cultural and Heritage Resources

- Focus on protecting or enhancing the current condition of the full range of cultural resources on the Forest.
- Follow regulations and direction outlined in the National Historic Preservation Act or Forest Service guidance in Forest Service Manual 2300.
- Consider the following options as strategies and techniques to protect cultural resources: signing, fencing, administrative closure, law enforcement, visitor contacts, permits for visitation to sensitive cultural landscapes, fuel reduction around vulnerable sites, vegetation restoration, and visitor education.
- Align cultural resource management with appropriate recreation opportunity spectrum classes and scenic integrity objectives, to better manage visitor impacts.
- Emphasize site, resource, and landscape protection and respect for tribal values. Historic period sites are likewise managed with respect for the values of rural historic communities and focuses on resource protection.

- Potential protective measures to maintain or enhance cultural resources may include vegetation treatment, with appropriate protection measures in place in, next to site boundaries, signing, fencing, administrative closure, patrols, and interpretive signs.
- Education emphasizes the sacred and fragile nature of cultural resources and how to visit sites with respect. It includes what we are learning about the history of human activity on the Forest based on information from tribal and rural historic communities and research. Sharing this information enhances the experience of visitors, highlights local connections, and deepens tribal relationships with the Forest.
- Consider techniques to proactively manage for cultural resource protection. These may include activities such as using fuel reduction, erosion control, and soil stabilization around sites.
- Focus on maintaining cultural landscapes in good condition, which should help contribute to the quality of visitor experiences on the forest.
- Consider using programs such as Passport in Time or Wilderness Volunteer projects to not only accomplish work but also to educate and increase awareness about the values and diversity of cultural resources.
- Emphasize and consider that mitigation measures are subject to Section 106 consultation.

Areas of Tribal Interest

- Emphasize expanding the Forest's acknowledgement of and respect for tribal sovereignty.
- Recognizes and respect that tribal interests extend beyond narrowly defined cultural resources and include other resources such as wildlife, fisheries, plant communities, landforms and springs. Taken together, these make up the landscapes to which tribal beliefs are anchored, and the land is the foundation of tribal sovereignty.
- Recognize and respect that there are types of cultural resources that can only be recognized by tribal representatives who know traditional cultural practices.
- Promote cultural continuity and, ultimately, tribal wellness by preserving and restoring land, wildlife, and natural resources as a sanctuary for spiritual and cultural renewal.

Recreation and Access

- Focus on how to remain flexible enough to meet increased demand for recreation opportunities without experiencing unacceptable impacts on resources.
- Emphasize effective management solutions that consider existing changes in technology, emerging new technology, rapid population growth, and changing demographics with different demands, diversity, and interests.
- Prioritize necessary public services and settings that provide the basis for recreation opportunities and experiences.
- Recognize that not all new uses may be appropriate on the Forest and emphasize facilitating opportunities for those that are appropriate.
- Emphasize recreation opportunities that are responsive to the rapidly growing population of the Wasatch Front and increasing visitor use in the Moab area.
- Focus future priorities on data collected via National Visitor Use Monitoring surveys conducted every 5 years. This data includes indicators on activity participation, demographics, visit duration, visitor satisfaction, and trip spending across the forest.

Recreation Special Use Permits

- The Forest prioritizes providing special use permits that are responsive to public needs, provide unique opportunities, services, and experiences for the public, and contribute to meeting resource management objectives.

Access

- Emphasize developing the trail system as described in the National Strategy for a Sustainable Trail System.
- Base project designs and National Environmental Policy Act decisions affecting the transportation system on the most current Transportation Analysis Report and public input.
- Amend the Transportation Analysis Plan based on not only the most current Transportation Analysis Report and public input, but also transportation system decisions that have been evaluated during National Environmental Policy Act analyses.
- Prioritize maintenance to mitigate resource damage and promote public safety on roads and trails.
- Prioritize repairing roads and associated features in priority watersheds, especially where chronic sediment sources exist.
- Repairs for locations where roads are impacting riparian management zones, should include but are not limited to addressing culvert configuration, reducing sediment delivery to waterways from roads, or realigning stream constraining road segments. Use the travel analysis process road crossing conditions as a guide.
- For heavily used trails with documented user conflicts consider limiting use with permit systems and or seasonal closures or designating the trail for specific uses.
- Consider emerging technology opportunities during travel management, such as opportunities for e-bikes

Scenery Management

- Emphasize incorporating scenery guidance and design features into all projects as recognition that a benefit to the scenery resource often benefits other resources, since the primary sense Forest users and visitors rely upon to determine their value and experience of the Forest is based on what they see.
- Prioritize projects that may move areas not currently meeting their scenic integrity objectives towards meeting or exceeding their scenic integrity objectives.
- Integrate ways to improve scenic integrity, where existing scenic conditions are not consistent with desired scenic integrity objectives, into other resource projects, such as including project activities to remove unwanted or unneeded facilities, recontour topography, or revegetate bare ground.
- Consider best environmental design practices to advance environmentally sustainable design solutions (e.g., Sustainable Recreation Site Design Guide).
- Set priorities for scenic integrity rehabilitation considering the following: a. Foreground (within 300 feet to 0.5 mile) of high public use areas has the highest priority; b. Amount of deviation from the scenic integrity objectives; c. Length of time it would take natural processes to reduce the visual impacts so that they meet the scenic integrity objectives; d. Length of time it will take rehabilitation measures to meet the scenic integrity objectives; e. Benefits to other resource management objectives to accomplish rehabilitation; f. Restoration of scenic integrity in areas where it has been negatively impacted as other project work is accomplished or funds are available; and g. Where existing scenic integrity is lower than the scenic integrity map.

- Prior to vegetation work in developed recreation sites or administrative facilities, consider developing vegetation management plans that outline activities to sustain the desired scenic character and key visual elements over time.
- Consider the following types of activities to enhance scenic resources; restore grasslands and aspen, decommission, or rehabilitate unneeded and unauthorized system roads and routes, remove unnecessary fences, and paint facilities along scenic byways.

Facilities Management

- Focus on maintaining and managing facilities in a manner that meets the needs of the intended purpose and provides long-term sustainability of the structure.
- Prioritize new facilities to provide employee housing to meet the Forest's workforce needs, if funding becomes available.

Land Ownership and Special Uses

- Prioritize land adjustment proposals that improve ownership patterns within the National Forest System that enhance manageability or provide access to the National Forest System lands.
- Identify and evaluate the need to acquire lands outside of the Forest Service administrative boundary that would prove beneficial in current or future management objectives.
- Focus on acquiring easements to provide access to National Forest System lands and for roads or trails that cross other lands that are not covered under a legal right-of-way.
- Prioritize surveying and posting property lines on boundaries with private landowners over those with other Federal and state lands.
- Prioritize renewing authorizations and completing permitting of already accepted proposals before accepting new proposals.
- Emphasize future needs and emerging technologies when evaluating communication sites.

Minerals and Energy Resources

- Emphasize site stabilization, hazard elimination, and ensuring long term health of the Forest resources.
- Opportunities for developing alternative energy sources such as wind and biomass are available.
- Consider proposals to develop mineral materials in accordance with agency or external needs.
- Emphasize using bat protection measures including seasonal closures, public education, and wildlife-friendly closures.

Fire and Fuels Management

- Focus treatment on restoring and maintaining natural fire regimes and reducing the negative impacts of wildfires. Use the following table, Table 28, to inform decisions about treatments.

Table 28. Vegetation Types and Desired Fire Regimes

Vegetation Type	Dominant Fire Regime Group	Acres	Fire Frequency	Range of Potential Acres Managed per Decade	Low Severity Fires	Mixed Severity Fires	High Severity Fires
Ponderosa Pine	1	95,466	15 years	38,335-101,479	38%	29%	33%
Spruce-fir	5	102,424	212 years	3,414-5,121	0%	2%	98%
Conifer Mixed	1, 3	118,433	15 years	16,200-94,220	67%	16%	17%
Deciduous	1	239,657	30 years	37,828-90,220	0%	54%	46%
Alpine	5	793	232 years	34-34	0%	0%	100%
Herbland	2	110,358	32 years	18,393-55,179	0%	20%	80%
Shrubland	3, 4, 5	180,647	60 years	17,251-69,741	1%	16%	83%
Pinyon-Juniper	3	325,770	100 years	16,121-21,824	10%	60%	30%
Woodland	3	197,346	40 years	12,722-37,999	10%	60%	30%
Riparian	1, 3	9,124	40 years	691-2,287	10%	30%	60%

Source: Based on Utah Fire Groups, LANDFIRE BpS/MFRI, and Manti-La Sal Terrestrial Condition Report.

- Prioritize a coordinated approach to reduce the threat of wildfire in the wildland urban interface and allow for cost-efficient fuel reduction strategies across lands.
- In wildfire urban interface areas and other areas with high concentrations of high-values at risk, wildfire is suppressed under most conditions due to the potential economic loss and public safety concerns posed by a wildfire.
- In wildfire urban interface areas and other areas with high concentrations of high-values at risk, planned ignitions may also be used if assurances can be made for firefighter and public safety, and protection of resources within the area.
- In wildfire urban interface areas and other areas with high concentrations of high-values at risk, consider managing vegetation toward a condition that is not within that vegetation type's natural fire regime to reduce the risk of social, and economic loss and to improve public safety.
- When wildland fires occur, the Forest will develop response strategies based on the risk considerations of life, safety, and potential resource impacts and with the participation of other responsible agencies, authorities, and jurisdictions as appropriate. The wildland fire decision support process will define and document wildfire and prescribed fire management decisions.
- In areas not highly departed from desired conditions, wildland fires may be managed to burn with the intensity and frequency of the reference fire regime when fire weather conditions are appropriate, and resources are available to successfully meet objectives.
- Wildland fires should be used to achieve management objectives for multiple resource benefits, including wildlife habitat and watershed health, when conditions permit and are within acceptable risk limits. Emphasize ensuring firefighter and public safety, and protection of resources within the area when determining acceptable risk limits.
- Focus treatments on reducing fuel loads that may deviate from other resource requirements to meet the desired fire behavior characteristics in areas of dense high-value resources at risk.
- If there is conflict between the need to mitigate hazardous fuels to protect critical values, particularly human improvements, and other natural resource concerns the favor will be to protection of those values.
- A Hazard Risk Assessment and other fuels and fire behavior analytical processes, models and tools are used to determine potential risk to values, prioritize treatments and evaluate the positive and negative benefits from fire management activities.
- Treatments for fuel reduction may include planned and unplanned ignitions as well as non-fire techniques including but not limited to mechanical thinning.

Livestock Grazing and Range Management

- Consider trail designs that avoid stock tanks, incorporation of self-closing gates, use of all-terrain vehicle cattle guards, or gates around cattle guards for horseback riders in areas where known livestock and recreation user conflicts exist.
- Emphasize ecological resilience and watershed health to contribute to the direct and indirect sustainability of grazing on the Forest.
- Focus restoration of priority habitat and landscapes on increasing resilience to disturbance and enhancing resistance to invasive species by maintaining perennial herbaceous species.
- Management practices should use science and ecological conditions to make informed decisions and respond to changes in the environment, to promote successful grazing operations.
- Allotment management plans will be updated after a condition assessment of allotment(s) and existing NEPA to determine if new information or changed circumstances result in significant impacts outside of the scope and range of effects considered in the original analysis (FS Policy: Forest Service Handbook 1909.15 § 18), ie. T&E species now present.
- Management strategies are informed by regular monitoring and working closely with partners and permittees. Grazing systems and management techniques are monitored for effectiveness toward achieving resource desired conditions, meeting multiple use objectives and resolving conflicts with other resources.
- Focus on range infrastructure maintenance and reconstruction to protect resources and improve livestock distribution as funds and resources allow.
- Prioritize funding to address range structures or projects that are not meeting standards and are having negative impacts on valuable resources. Range funding will also be prioritized for infrastructure damage during fire, floods or other natural disasters.
- Continue employing management techniques to reduce or eliminate impacts to at-risk plants and animals, as well as cultural resources.

Timber Management

- Recognize and respond to industry capacity and market demand for forest products, when determining project priorities, future program levels and the attainability of desired conditions.
- Prioritize timber activities that focus on landscapes at high risk for developing insect or disease infestation, where disturbances have resulted in large areas of mortality, and landscapes with altered fire regimes.
- Emphasize treatments that will focus on stands where vegetation management could most effectively move species composition and stand structure closer to desired conditions and where wood processing facilities can most economically use forest products.
- Consider multiple strategies to meet forest products demand, including integration of timber and fuels programs, salvage of insect and disease killed trees, use of small diameter and biomass markets, and selling a wide variety of size and species to maintain the forest products industry.

Wilderness Areas

- Emphasize and analyze all components of wilderness character: the qualities of untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation, and other features of value, such as ecological, geological, scientific, scenic, or historic value unique to each specific wilderness area.

Research Natural Areas

- Emphasize management activities that promote research and development, study, observation, monitoring, and those educational activities that do not modify the conditions for which the research natural area was established.
- Recognize that continuing baseline studies may be occasionally visible in terms of equipment, instruments, and related activities.

National Scenic Byways

- Balance the management and conservation of the byway's intrinsic qualities with the public's use and enjoyment of those qualities.
- Prioritize restoring the Huntington Canyon portion of the scenic byway to the sense of place it possessed prior to the 2012 Seely and 2018 Trail Mountain wildfires.
- Emphasize enhancing recreation opportunities and tourism that supports the local communities along the scenic byway.

National Recreation Trails

- Reconstruct or relocate existing portions of the trail as needed to enhance the recreation experience; improve trail sustainability; protect threatened, endangered, sensitive, and locally rare species; or to protect heritage resources. Such relocations provide a reasonable level of public safety.

Mont E. Lewis Botanical Area

- Emphasize maintaining the ecological process and functionality of this area's wetland and vegetation system.
- Passive management should be emphasized, unless more active management is necessary to maintain the integrity of the site.
- Protection, research, study, observation, monitoring, and interpretation of land and resources within the botanical area should continue.
- Perpetuate the lack of administrative structures, utility corridors, roads, trails and other improvements that would deter from or otherwise impair the designated Botanical Area.

Great Basin Experimental Range

- The Great Basin Experimental Range is uniquely suited for future watershed and range research and is protected from Forest activities that would degrade its value for research.
- Interpretive opportunities should include at least signs along the Ephraim Canyon Road, the Museum at the Great Basin Research Station Historic District, and the preservation of selected historic buildings and features.
- Consult with station director on future management activities within the experimental range including but not limited to vegetation treatment projects, road construction, timber harvest, and proposed conversions of livestock grazing permits from sheep to cattle.

Municipal Watershed Management Area

- Prioritize protecting the watershed and water supply when and where resource management conflicts occur.
- Emphasize maximizing herbaceous ground cover and minimizing surface disturbing activities.

- Provide for limited land uses and activities that do not degrade the water quality or disrupt the watershed or source areas.

Horn Mountain and Wildcat Knolls Geographic Area

- Prioritize the protection of greater sage grouse, wintering big game, and their associated habitats.
- Emphasize vegetation treatments that restore big game winter range and greater sage grouse habitat, by reducing pinyon-juniper expansion and managing the curl-leaf mahogany and serviceberry assemblage for a diverse age class. Tools and techniques to accomplish these treatments could include mechanical, chemical, and prescribed fire. All vegetation treatments should prioritize and emphasize the ecological needs of greater sage grouse and big game.
- Consider one of two treatment types when using vegetation treatments to restore habitat. Shrubland and Woodland treatments are targeted toward improving habitat for sage-grouse and other sagebrush obligate species. Woodland treatments outside of sage grouse seasonal habitat, will be focused on phase I and II wooded shrubland expansion, or the expansion or encroachment of this vegetation type into the shrubland vegetation type, and should emphasize a diversity in age class and structure to support the needs of big game. Other vegetation types including but not limited to phase III and persistent woodlands, should not be emphasized, or treated unless treatments are designed to meet the needs of pinyon obligates such as pinyon jays
- When considering timing restrictions for winter big game closure periods, consider best available information, as well as site-specific factors including but not limited to topography and available habitat.

Maple Canyon Geographic Area

- Focus future management on the social and resource concerns related to the high demand for camping and recreation to ensure sustainable use.

Moab Geographic Area

- Prioritize protection of the single-source aquifer when considering management activities.
- Consider views from Arches National Park, Canyonlands National Park, Dead Horse Point State Park and the cities of Castle Valley and Moab during scenery analysis.
- Consider techniques such as feathering the edges of treatment units and leaving a mosaic of vegetation on the landscape to mimic natural scenic landscape composition including canopy openings and density variation.

GLOSSARY

A

Access

Road or trail route over which a public agency claims a right-of-way for public use; a way of approach.

Adaptive management

An approach to natural resource management where actions are designed and executed and effects are monitored for the purpose of learning and adjusting future management actions, which improves the efficiency and responsiveness of management.

Aerial system

A timber harvesting yarding system that employs aerial means, such as helicopters, balloons, high lead cable lines and skyline yarding.

Age class

Age class is one of the intervals, commonly 10 years, into which the age range of trees is divided for classification or use. Age class distribution refers to the location or proportionate representation of different age classes in a forest.

Air quality-related values

Resource that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource. Values are specific for each designated wilderness area.

Aircraft

A device that is used, or intended to be used, for flight according to the current Title 14 of the Code of Federal Regulations (14 CFR) part 1, General Definitions; and includes airplane, rotorcraft, glider, lighter-than-air, powered-lift, powered parachute, and weight-shift control aircraft.

Animal

A living organism within the Animalia kingdom including many-celled organisms and often many of the single-celled ones (such as protozoans) that typically differ from plants in having cells without cellulose walls, in lacking chlorophyll and the capacity for photosynthesis, in requiring more complex food materials (such as proteins), in being organized to a greater degree of complexity, and in having the capacity for spontaneous movement and rapid motor responses to stimulation.

Assessment

For the purposes of land management planning at 36 CFR 219, an assessment is the identification and evaluation of existing information to support land management planning.

Assessments are not decision-making documents but provide current information on select topics relevant to the plan area in the context of their borders.

At-risk species

A term used to collectively refer to the federally-recognized threatened, endangered, proposed, and candidate species and species of conservation concern within the planning area.

Aquatic ecosystem

The stream channel, lake or estuary bed, water, and biotic communities and the habitat features that occur therein. (FSM 2526)

B**Bark beetle**

Bark beetles are members of the family *Circulionidae*, subfamily *Scolytinae* whose adults and larvae tunnel in the cambium region (bark and sapwood) of living, dying, and recently dead or felled trees.

Basal area

The cross-sectional area, in square feet, of a tree measured at breast height, or 4.5 feet above ground. Basal area of an area is generally estimated in terms of square feet per acre.

Best management practices

Methods or techniques that have been determined to be the most effective and practical means of achieving an objective while making the optimum use of resources.

Big game

Those species of large mammals normally managed for sport hunting, generally including antelope, bighorn sheep, deer, elk, moose, and mountain goat.

Biological diversity, or biodiversity

The full variety of life in an area, including the ecosystem, plant, and animal communities, species and genes, and the processes through which individual organisms interact with one another and with their environment.

Biotic

Typically refers to living organisms in their ecological rather than their physiological relations.

Browse

The buds, shoots, and leaves of woody plants eaten by livestock or wild animals.

C**Candidate species**

For species under the purview of the U.S. Fish and Wildlife Service (Service), a species for which the Service possesses sufficient information on vulnerability and threat to support a proposal to list as endangered or threatened, but for which no proposed rule has yet been published.

Canopy

The uppermost spreading, branchy layer of a forest.

Canopy cover

The proportion of ground or water covered by the vertical projection of the outermost perimeter of the natural spread of foliage or plants.

Capability

The potential of an area to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends on current management practices at a given level of management intensity. It is also dependent on existing resource and site conditions such as climate, slope, landform, soil, and geology, as well as the application of management practices, such as silviculture or the protection from fire, insects, and disease.

Carbon sequestration

The ability of a plant to remove carbon dioxide from the atmosphere and convert it to carbohydrates through photosynthesis and store it in the plant (leaves, stems, roots). Forests are by far the best land cover for storing carbon since a high percentage of wood fiber is made up of carbon.

Carbon stock

Carbon stored in the ecosystem—in living biomass, soil, dead wood, and litter (see carbon sequestration). For purposes of carbon assessment for National Forest System land management planning, carbon in fossil fuel resources, lakes or rivers, emissions from agency operations, or public use of National Forest System lands (such as emissions from vehicles and facilities) is not included.

Channel

A passage, either naturally or artificially created, that periodically or continuously contains moving water, or that forms a connecting link between two bodies of water. River, creek, run, branch, and tributary are some of the terms used to describe natural channels, which may be single or braided. Canal and floodway are some of the terms used to describe artificial channels.

Clearcut or clearcutting

A stand in which essentially all trees have been removed in one operation to produce an even-aged stand.

Climax

The culminating stage in plant succession for a given site where the vegetation has reached a highly stable condition.

Coarse woody debris

Provides living spaces for a host of organisms and serves as long-term storage sites for moisture, nutrients, and energy. Coarse woody debris consists of any woody material greater than 3 inches in diameter and is derived from tree limbs, boles, roots, and large wood fragments and fallen trees in various stages of decay.

Code of Federal Regulations (CFR)

The listing of various regulations pertaining to management and administration of national forests and other Federal lands.

Collaboration or Collaborative process

A structured way a collection of people with diverse interests shares knowledge, ideas, and resources while working together in an inclusive and cooperative manner toward a common purpose. In the context of land management planning, collaboration falls within the full spectrum of public engagement described in “Collaboration in NEPA—A Handbook for NEPA Practitioners” (Council on Environmental Quality 2007).

Commercial thinning

An intermediate harvest of commercial-sized trees to meet a variety of management objectives including reducing stand density to improve tree growth, improving forest health, or to meet other stand structural or composition objectives.

Community Water Sources

Refers to bodies of water (such as rivers, streams, lakes, reservoirs, springs, and ground water) that provide water to public drinking-water supplies and private wells.

Compensatory Mitigation (sage-grouse)

Compensating for the residual impact of a certain action or parts of an action by replacing or providing substitute resources or environments(s). (40 CFR §1508.20)

Concern Level:

A measure of the degree of public importance placed on landscapes viewed from travelways and use area. From the Scenery Management System.

Concern level 1

A Scenery Management System term, these areas generally include all visible areas from primary travel routes, use areas, and water bodies, where there is high public interest in the area’s scenic qualities.

Connectivity

Ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to fluctuations in climate.

Constraint

A qualification of the minimum or maximum amount of an output or cost that could be produced or incurred in a given time period.

Construction

The displacement of vegetation, soil, rock, and the installation of infrastructure involved in the process of building a complete, permanent road facility. The activities occur at a location or corridor that is not currently occupied by a road.

Conventional ground-based equipment

Timber harvesting equipment that typically includes a combination of chainsaw, cable skidder, and trailer-mounted loader for harvesting timber. A small or medium-sized bulldozer is also often found on site to construct the landing as well as skid roads.

Corridor (utility or right-of-way)

A linear strip of land defined for the present or future location of transportation or utility right-of-way within its boundaries.

Council on Environmental Quality

An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effects on the environment, conducts environmental studies, and advises the President on environmental matters.

Cover type

The dominant vegetation in an area—for example, aspen, ponderosa pine, or sedges.

Critical habitat

For a threatened or endangered species, (1) the specific areas within the geographical area occupied by the species, at the time it is listed under the Endangered Species Act, on which are found those physical or biological features (a) essential to the conservation of the species, and (b) which may require species management considerations or protection; and (2) specific areas outside of the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such area are essential for the conservation of the species. Critical habitat is designated through rule making by the Secretary of the Interior or Commerce.

Crown

The upper part of a tree or other woody plant carrying the main branch system and foliage.

Culmination of mean annual increment

Mean annual increment of growth and culmination of mean annual increment of growth. Mean annual increment of growth is the total increment of increase of volume of a stand, or the standing crop plus thinnings, up to a given age divided by that age. Culmination of mean annual increment of growth is the age in the growth cycle of an even-aged stand at which the average annual rate of increase of volume is at a maximum. In land management plans, mean annual increment is expressed in cubic measure and is based on the expected growth of stands, according to intensities and utilization guidelines in the plan.

Cultural landscapes

Cultural resources that represent the combined works of nature and humans.

Cultural resources

An object or definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence. Cultural resources are precontact, historic, archaeological, or architectural sites, structures, places, or objects, traditional cultural properties, sacred sites, as well as landscape features, plants, minerals, birds, and animal populations. Cultural resources include the entire spectrum of resources from artifacts to cultural landscapes, without regard to eligibility for listing on the National Register of Historic Places.

D**Decadence**

A process, condition, or period of deterioration or decline.

Deciduous

A deciduous tree or shrub sheds its leaves annually.

Decommission

Demolition, dismantling, removal, obliteration, and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Decommissioning roads includes activities that result in the stabilization and restoration of unneeded roads to a more natural state.

Decontamination Procedures

Decontamination is a combination of processes that removes or destroys contamination so that infectious agents or other contaminants cannot reach a susceptible site in sufficient quantities to initiate infection, or other harmful response.

Degradation

To wear down by erosion, especially through stream action.

Demand

The amount of an output that users are willing to take at a specified price, time period, and condition of sale.

Designated area:

An area or feature identified and managed to maintain its unique special character or purpose. Some categories of designated areas may be designated only by statute and some categories may be established administratively in the land management planning process or by other administrative processes of the Federal executive branch. Examples of statutorily designated areas are national heritage areas, national recreational areas, national scenic trails, wild and scenic rivers, wilderness areas, and wilderness study areas. Examples of administratively designated areas are experimental forests, research natural areas, scenic byways, botanical areas, and significant caves.

Designated dispersed campsite

A site designated and signed by the Forest Service for the purpose of overnight camping. These sites typically do not include amenities as developed campsites do but are designated to concentrate use.

Designated wilderness

Designated wilderness refers to any area of land designated by Congress as part of the National Wilderness Preservation System that was established by the Wilderness Act of 1964.

Desired condition

A description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. (36 CFR 219.7(e)(1)(i))

Desirable nonnative species

A species which does not occur naturally but was introduced in a particular region/area that does not or is not likely to cause economic or environmental harm and has value for social and/or economic reasons.

Developed recreation

Recreation that occurs at constructed developments such as campgrounds, picnic grounds, resorts, ski areas, trailheads, etc. Facilities might include roads, parking lots, picnic tables, toilets, drinking water, ski lifts, and buildings. Campgrounds and picnic areas are examples of developed recreation sites.

Developed site

Developed recreation sites are relatively small, distinctly defined areas where facilities are provided for concentrated public use, such as campgrounds and picnic areas.

Diameter at breast height (dbh)

The diameter of a standing tree measured at a point 4 feet 6 inches from ground level on the uphill side.

Dispersed recreation

Outdoor recreation that is spread out over the land and in conjunction with roads, trails, and undeveloped waterways. Activities are typically day-use oriented and include hunting, fishing, boating, hiking, off-road vehicle use, cross-country skiing, motorbiking, and mountain climbing.

Dispersion

The slowing and distribution of water runoff over an area.

Disturbance

Any relatively discrete event in time that disrupts ecosystem, watershed, community, or species population structure and/or function and changes resources, substrate availability, or the physical environment.

Diversity

The distribution and abundance of different plant and animal communities and species within an area. This term is not synonymous with “biological diversity.”

Down or downed

A tree or portion of a tree that is dead and lying on the ground.

Downed woody material or debris

Woody material, from any source, that is dead and lying on the forest floor.

E**Easement**

A right afforded a person or agency to make limited use of another’s real property for access or other purposes.

Ecological conditions

The biological and physical environment that can affect the diversity of plant and animal communities, the persistence of native species, and the productive capacity of ecological systems. Ecological conditions include habitat and other influences on species and the environment. Examples of ecological conditions include the abundance and distribution of aquatic and terrestrial habitats, connectivity, roads, and other structural developments, human uses, and invasive species.

Ecological integrity

The quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influences.

Ecological process

The actions or events that link organisms (including humans) and their environment, such as disturbance, successional development, nutrient cycling, carbon sequestration, productivity, and decay.

Ecological sustainability

The capability of ecosystems to maintain ecological integrity.

Economic sustainability

The capability of society to produce and consume or otherwise benefit from goods and services, including contributions to jobs and market and nonmarket benefits.

Ecosystem

A spatially explicit, relatively homogenous unit of the Earth that includes all interacting organisms and elements of the abiotic environment within its boundaries. Usually described in terms of its composition, structure, function, and connectivity.

Ecosystem services

The direct and indirect contributions of ecosystems to human well-being. They directly or indirectly support survival and quality of life. Ecosystem services can be categorized into types:

Provisioning services – products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources, and medicines.

Regulating services – benefits obtained from the regulation of ecosystem processes such as climate and natural hazards, water purification, waste management, pollination, and pest control.

Cultural services – nonmaterial benefits that people obtain from ecosystems such as spiritual enrichment, intellectual development, recreation, and aesthetic values.

Supporting services – ecosystem services that are necessary for the production of all other ecosystem services. Examples include biomass production, production of atmospheric oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.

Edge

The place where plant communities meet or where successional stages or vegetative conditions within plant communities come together.

Endangered species

Any species that the Secretary of Interior or the Secretary of Commerce has determined is in danger of extinction throughout all or a significant portion of its range.

Endangered Species Act

Public Law 93-205, approved in 1973 and since amended, the Endangered Species Act provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend.

Enhancement emphasis area

An area in which wildland fire, as a natural disturbance process, can play a key role in maintaining, restoring, and enhancing ecosystem resiliency. In enhancement emphasis areas, there are opportunities to utilize natural ignitions to achieve desired conditions on the landscape.

Environmental Flows

Environmental flows describe the quantity, timing, and quality of freshwater flows and levels necessary to sustain aquatic and riparian ecosystems which, in turn, support human cultures, economies, sustainable livelihoods, and well-being. (Arthington et al. 2018)

Environmental Impact Statement (EIS)

A formal public document prepared to analyze the impacts on the environment of a proposed project or action and released for comment and review. It is prepared first in draft or review form and later in final form. An EIS must meet the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) guidelines, and directives of the agency responsible for the proposed project. An impact statement includes the following points: 1) the environmental impact of the proposed action, 2) any adverse impacts that cannot be

avoided by the action, 3) the alternative courses of actions, 4) the relationships between local short-term use of the human environment and the maintenance and enhancement of long-term productivity, and 5) a description of the irreversible and irretrievable commitment of resources, which would occur if the action were accomplished.

Erosion

Detachment or movement of the land surface by water, wind, ice, gravity, or other geological activity. Accelerated erosion is much more rapid than normal, natural, geologic erosion, primarily as a result of the influence of activities of man, animals, or natural catastrophes.

Even-aged management

The application of a combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Managed even-aged forests are characterized by a distribution of stands of varying ages (and therefore, tree sizes throughout the forested area). The difference in age between trees forming the main canopy level of a stand generally does not exceed 20 percent of the age of the stand at harvest rotation age. Regeneration in a particular stand is obtained during a short period at or near the time that a stand has reached the desired age or size for regeneration and is harvested. Clearcut, shelterwood, or seed-tree cutting methods produce even-aged stands (36 CFR 219.3).

Executive order

An order of regulation issued by the President or some administrative authority under his or her direction.

F**Facility**

Structures needed to support the management, protection, and use of the national forests, including buildings, utility systems, dams, and other construction features. There are three types of facilities: recreation, administrative, and permittee.

Fen

A wetland ecosystem dependent on nutrient-rich local or regional groundwater flow systems maintaining perennial soil saturation and supporting continuous organic soil (i.e., peat) accumulation. (FS-990A)

Fire regime

Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in a given area or ecosystem. A fire regime is a generalization based on fire histories at individual sites. Fire regimes typically are described as cycles because some parts of the histories are repeated, and the repetitions can be counted and measured, such as fire return interval.

Floodplain

The flat area of land adjacent to a river channel that is composed of unconsolidated sediments (alluvium) deposited when the river overflows its banks at flood stages.

Focal species

A small subset of species whose status infers the integrity of the large ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Focal species would be commonly selected on the basis of their functional role in ecosystems (36 Code of Federal Regulations 219.19).

Forage

All browse and herbaceous foods that are available to grazing animals.

Forb

Any herbaceous flowering plant other than grasses.

Foreground

A term used in scenery management to describe the portions of a view between the observer and as far as one-quarter to one-half mile distant.

Forest health

The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, and vigor, presence of unusual levels of insects and diseases, and resilience to disturbance.

Forest plan

Source of management direction for an individual national forest that specifies activity and output levels for a time period. Management direction in the plan is based on the issues identified at the time of the plan's development.

Forest plan revision

The process for revising a Forest Plan includes working identification of the need to change the plan based on the assessment, development of a proposed plan, consideration of the environmental effects of the proposal and preparation of a draft environmental impact statement, providing an opportunity for the public to comment on the proposed plan, providing an opportunity for the public to object before the proposal is approved, and finally, approval of the plan and preparation of the final environmental impact statement.

Fragmentation

A process that occurs wherever a large, contiguous habitat is transformed into smaller patches that are isolated from each other by a landscape matrix unlike the original. This matrix can differ from the original habitat in either composition or structure. The crucial point is that it functions as either a partial or total barrier to dispersal for species associated with the original habitat. A clear threat to population persistence occurs when fragmentation isolates pairs and populations, as opposed to fragmentation within the home range of individual pairs.

Fuel

Organic material that will support the start and spread of a fire: duff, litter, grass, weeds, forbs, brush, trees, and dead wood materials.

Fuel load

The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area. This may be available (consumable) fuel or total fuel and is typically dry weight.

Fuels management

The manipulation of vegetation for the purpose of changing the characteristics of a fire as it burns.

Fuels reduction treatment

Manipulation or removal of fuels to lessen potential damage and resistance to control (includes mechanical and prescribed fire treatments). Fuels reduction treatments result in a change in the amount, configuration, and spacing of live and dead vegetation, with the purpose of creating conditions that result in more manageable fire behavior and reduced severity during wildland fires.

Fuelwood

Round, split, or sawed wood of general refuse material, which is cut into short lengths for burning as fuel.

G**Game species**

Any species of wildlife or fish for which hunting seasons and bag limits have been established and are normally harvested by hunters and fishermen.

General Mining Act of 1872

Provides for claiming and gaining title to locatable minerals on public lands. Also referred to as the “general mining laws” or “mining laws.”

Geographic area

A spatially contiguous land area identified within the planning area. A geographic area may overlap with management areas.

Geographic information system (GIS)

An information processing technology to input, store, manipulate, analyze, and display spatial resource data to support the decision-making processes of an organization. Generally, an electronic medium for processing map information.

Goal

Goals are broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Goals are expressed in broad, general terms, but do not include completion dates.

Grass/forb

An early forest successional stage during which grasses and forbs are the dominant vegetation.

Greater sage grouse breeding habitat

Leks and the sagebrush habitat surrounding leks that are collectively used for pre-laying, breeding, nesting, and early brood-rearing activities from approximately March through June (Connelly et al. 2000; Connelly et al. 2003).

Greater sage grouse early brood-rearing habitat

Upland sagebrush sites relatively close to nest sites, typically characterized by high species richness with an abundance of forbs and insects, where sage-grouse hens raise young chicks (<21 days old) (Connelly et al. 2000).

Greater sage grouse late brood-rearing habitat

A variety of habitats used by sage-grouse from July through September, including, but not limited to, wet meadows, farmland, riparian areas, dry lakebeds, and sagebrush areas (Connelly et al. 2000).

Greater sage grouse nesting habitat

Area with protective grass and high lateral shrub cover where hens nest, typically under sagebrush shrubs (Connelly et al. 2000).

Groundwater

All water below the ground surface, including water in the saturated and unsaturated zones. (USDA Forest Service General Technical Report WO-86a, 2012)

Groundwater-dependent ecosystems

Communities of plants, animals, and other organisms whose extent and life processes are dependent on access to or discharge of groundwater. Examples include springs, seeps, fens and wetlands.

Group selection

A method of regenerating uneven-aged stands in which trees are cut, in small groups, and new age classes are established. The width of groups is commonly approximately twice the height of the mature trees, with small openings providing suitable microclimates for shade-tolerant tree species to regenerate, and the larger openings providing suitable microclimates for more shade-intolerant tree species to regenerate.

Guideline

A constraint on project and activity decision making that allows for departure from its terms, so long as the purpose of the guideline is met. Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. (36 CFR 219.7(e)(1) (iv))

Guidelines are similar to standards in that they are design criteria for projects and activities to help achieve the desired conditions and objectives, or at least to ensure that projects or activities do not foreclose their maintenance or attainment. Guidelines differ from standards in that they provide flexibility for compliance, while standards are concrete limitations.

H

Habitat

The natural environment of a plant or animal. In wildlife management, the major components of habitat are food, water, cover, and living space.

Healthy ecosystem

An ecosystem in which structure and functions allow the maintenance of biological diversity, biotic integrity, and ecological processes over time.

Herbaceous

Of, denoting, or relating to herbs.

Hibernacula

Habitat niches where certain animals, e.g., bats, over-winter, such as caves, mines, tree hollows, or loose bark.

High flotation ground-based equipment

Timber harvesting equipment that decreases ground pressure by either dual tire or high-flotation tires on wheeled equipment, or wider tracks on tracked equipment.

Hydrologic unit code (HUC)

A unique numeric code that is used to identify watersheds in the United States for the purpose of providing a standardized base for use by water-resource organizations in locating, storing, retrieving, and exchanging hydrologic data (Seaber and others 1987).

I

Ignition

The initiation of combustion.

Indicator

A measurable attribute of social and ecological conditions that is used to answer monitoring questions and evaluate progress toward maintaining or achieving desired conditions.

INFRA

INFRA is a collection of web-based data entry forms, reporting tools, and GIS tools that enable the Forest Service to manage and report accurate information about the inventory of constructed features and land units as well as the permits sold to the public and to partners.

Infrastructure

The facilities, utilities, and transportation system needed to meet public and administrative needs for operation, e.g., buildings, roads, and power supplies.

Inholding

Land within the proclaimed boundaries of a national forest that is owned by a private citizen, an organization, or an agency.

Interdisciplinary team

A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad enough to adequately solve the problem.

Intermittent stream

A stream or reach of stream channel that flows, in its natural condition, only during certain times of the year or in several years. Characterized by interspersed, permanent surface water areas containing aquatic flora and fauna adapted to the relatively harsh environmental conditions found in these types of environments (Briggs 1996).

Interpretation

Explaining the meaning or significance of something.

Introduced Species

A plant or animal species anthropogenically released into the wild in an area where it does not naturally occur.

Invasive species

Native species are those that have occurred, now occur, or may occur in an area, as a result of natural processes.

Exotic or nonnative, foreign, or alien species are those that live outside their native range and arrived there by human activity, either deliberate or accidental.

Invasive species can thrive and spread aggressively outside their natural range. They affect both aquatic and terrestrial areas and can be plants, vertebrates, invertebrates, and pathogens.

Invertebrate

An animal lacking a spinal column.

Irretrievable

Applies to losses of production, harvest, or uses of renewable natural resources. For example, some or all timber production from an area is irretrievably lost while an area is used as a road surface. If the use is changed, timber production can be resumed. The production lost is irretrievable, but the action is not irreversible.

Irreversible

Applies primarily to the use of nonrenewable resources, such as minerals or cultural resources, or to those factors that are renewable only over long-time spans, such as soil productivity. Irreversible also includes loss of future options.

K

Key area

A relatively small portion of a range selected because of its location, use or grazing value as a monitoring point for grazing use. It is assumed that key areas, if properly selected, will reflect the overall acceptability of current grazing management over the range. Society for Range Management. 1998. Glossary of terms used in range management, fourth edition. Edited by the Glossary Update Task Group, Thomas E. Bedell, Chairman. Used with permission.

L

Land exchange

The conveyance of non-Federal land or interests to the United States in exchange for National Forest System land or interests in land.

Landscape

A defined area irrespective of ownership or other artificial boundaries, such as a spatial mosaic of terrestrial and aquatic ecosystems, landforms, and plant communities, repeated in similar form throughout such a defined area.

Landscape scale

A heterogeneous land area composed of a cluster of interacting ecosystems that are repeated in similar form throughout. Landscapes vary in size, from many thousands of acres to only a few kilometers in diameter.

Landslide

The moderately rapid to rapid downslope movement of soil and rock that may or may not be water saturated.

Late-successional forest

A stage of forest succession where most trees are mature or over-mature.

Leasable minerals

Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920, as amended, or by other specific legislation. They include coal, phosphate, asphalt, sulfur, potassium, sodium minerals, and oil and gas, and hard rock minerals on acquired NFS lands. Geothermal resources are also leasable under the Geothermal Steam Act of 1970.

Lease

A legal contract that conveys the right to explore for, develop and produce the specified mineral commodity for a specific time period under certain agreed-upon terms and conditions.

Leave tree

A tree marked to be left standing in an area where it would otherwise be felled.

Linkage

Broader regions of connectivity that are important to facilitate the movement of multiple species and maintain ecological processes.

Litter

A surface layer of loose organic debris, consisting of freshly fallen or slightly decomposed organic materials.

Locatable minerals

Minerals or materials subject to claim and development under the Mining Law of 1872, as amended. Generally, includes metallic minerals such as gold and silver, and other materials not subject to lease or sale, like some bentonites, limestone, talc, some zeolites, etc.

M**Maintenance**

The upkeep of the entire Forest Development Transportation Facility, including surfaces and shoulders, parking and side areas, structures, and such traffic control devices as are necessary for its safe and efficient use (36 CFR 212.1). Maintenance is not for the purpose of upgrading a facility, but to bring it to the originally constructed or subsequently reconstructed conditions.

Maintenance level

The level of service provided by, and maintenance required for, a specific road. For more information, see the entry for road maintenance level.

Management action

An action imposed by humans on a landscape for the purpose of managing natural resources.

Management approach

Management approaches describe the principal strategies and program priorities the responsible official intends to employ to carry out projects and activities developed under the plan. They can convey a sense of priority and focus among objectives and likely management emphasis. They are optional plan content.

Management area

A land area identified within the planning area that has the same set of applicable plan components. A management area does not have to be spatially contiguous.

Management direction

A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them. (36 CFR 219.3)

Management prescription

Management practices and intensity selected and scheduled for application on a specific area to attain multiple use and other goals and objectives. (36 CFR 219.3)

MBF

One thousand board feet of timber.

Mechanical treatment

Mechanical vegetation treatment is any activity undertaken to modify the existing condition of the vegetation accomplished with mechanical equipment.

Mechanized

Wheeled forms of transportation, including nonmotorized carts, wheelbarrows, bicycles, and any other nonmotorized, wheeled vehicle.

Memorandum of understanding

A legal agreement between the Forest Service and other agencies resulting from consultation between agencies that states specific measures the agencies will follow to accomplish a large or complex project. A memorandum of understanding is not a fund-obligating document.

Mineral

Locatable – Hard rock minerals that are mined and processed for the recovery of metals. They may include certain nonmetallic minerals and uncommon varieties of mineral materials such as valuable and distinctive deposits of limestone or silica.

Leasable – Coal, oil, gas, phosphate, sodium, potassium, oil shale, sulfur, and geothermal resources.

Salable (or mineral materials) – A collective term to describe common varieties of sand, gravel, stone, pumice, cinders, clay, and other similar materials. Common varieties do not include deposits of those materials that may be locatable. In general, these minerals are widely spread and are relatively low in unit value. They are generally used for construction materials and for road building purposes.

Mineral entry

Claiming public lands administered by the Forest Service under the Mining Law of 1872 for the purpose of exploiting minerals. May also refer to mineral exploration and development under the mineral leasing laws and Material Sale Act of 1947.

Mining

Extraction of valuable minerals or other geological materials from the earth.

Mitigate, or mitigation

To avoid, minimize, rectify, reduce, or compensate the adverse environmental impacts associated with an action.

Modification

A description in scenic integrity objectives when activities may dominate, but must use naturally established form, color, and texture. These areas should appear natural when viewed in the background.

Monitoring

A systematic process of collecting information to evaluate effects of actions or changes in conditions or relationships.

Montane

Of or inhabiting mountainous country.

Mosaic

The intermingling of plant communities and their successional stages in such a manner as to give the impression of an interwoven design.

Motorized equipment

A machine that uses a motor, engine, or other nonliving power source. This includes, but is not limited to, machines such as chain saws, aircraft, snowmobiles, generators, motorboats, and motor vehicles. It does not include small battery or gas powered hand carried devices such as shavers, wristwatches, flashlights, cameras, stoves, or other similar small equipment.

Motorized use

The designation of roads, trails, and areas that are open to motor vehicle use as specified in the Federal Register / Vol. 70, No. 216 / Wednesday, November 9, 2005 / 36 CFR Parts 212, 251, 261, Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule.

Multiple use

The management of all the various renewable surface resources of the national forests so that they are used in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in the use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output. (36 CFR 219.19)

N**National Environmental Policy Act (NEPA)**

A 1969 act declaring a national policy that encourages productive and enjoyable harmony between humankind and the environment, to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, to enrich the understanding of the ecological systems and natural resources important to the nation, and to establish a Council on Environmental Quality. (The Principal Laws Relating to Forest Service Activities, Agriculture Handbook No. 453, USDA Forest Service, 359 pp.) The NEPA process is an interdisciplinary process that concentrates decision-making around issues, concerns, alternatives, and the effects of alternatives on the environment. NEPA regulations are set out in Forest Service Handbook 1909.15.

National Forest Management Act

A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning Act, requiring the preparation of regional guides and Forest Plans, and the preparation of regulations to guide that development.

National Forest System lands

All national forest lands reserved or withdrawn from the public domain of the United States, all national forest lands acquired through purchase, exchange, donation, or other means, the national grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 USC 1010-1012), and other lands, waters, or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system. 16 USC 1609(a).

National Historic Preservation Act

Extends the policy in the Historic Sites Act to state and local historical sites as well as those of national significance, expands the National Register of Historic Places, establishes the Advisory Council on Historic Preservation and the State Historic Preservation Officers, and requires agencies to designate Federal Preservation Officers. Section 106 directs all Federal agencies to consider the effects of their undertakings (actions, financial support, and authorizations) on historic properties included in or eligible for the National Register. Section 110 establishes inventory, nomination, protection, and preservation responsibilities for federally owned historic properties.

National Register of Historic Places

The Nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archaeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The National Register is administered by the National Park Service.

Natural range of variation

The variation of ecological characteristics and processes over scales of time and space that are appropriate for a given management application. In contrast to the generality of historical ecology, the natural range of variation concept focuses on a distilled subset of past ecological knowledge developed for use by resource managers; it represents an elicited effort to incorporate a past perspective into management and conservation decisions. The pre-European influenced reference period considered should be sufficiently long, often several centuries', to include the full range of variation produced by dominant natural disturbance regimes such as fire and flooding and should also include short-term variation and cycles in climate. The natural range of variation is a tool for assessing the ecological integrity and does not necessarily constitute a management target or desired condition. The natural range of variation can help identify key structural, functional, compositional, and connectivity characteristics, for which plan components may be important for either maintenance or restoration of such ecological conditions.

Native species

Any species or subspecies of animal that historically occurred in Utah and has not been introduced by humans or migrated into Utah as a result of human activity.

Naturalized Species

any species or subspecies of animal that is not native to Utah but has established a wild, self-sustaining population in Utah.

Nonmotorized activities

Activities that do not incorporate the use of a motor, engine, or other nonliving power source. This includes such machines as aircraft, hovercraft, motorboats, automobiles, motor bikes, snowmobiles, bulldozers, chainsaws, rock drills, and generators.

Nonnative Species

A species or subspecies of animal that is not native to Utah or Colorado and does not include domestic animals or naturalized species of animals.

Noxious Weeds

Plant species identified in either the state of Utah or Colorado Noxious Weed classification lists.

O**Objective**

A concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Objectives should be based on reasonably foreseeable budgets.

Occupied greater sage grouse seasonal habitat

Seasonal habitats within home ranges that include breeding, summer, and winter habitats where sage-grouse have been documented in any of the previous 10 years.

Old growth

The overstory is dominated by late seral or climax species of a certain age and size, and has other characteristics such as dead trees, snags, canopy layers, downed woody material, and trees with rotten, dead, or broken tops.

Opening

Meadows, clearcuts, and other areas of vegetation that do not provide cover.

Overstory

That portion of a plant community consisting of the taller plants on the site; the forest or woodland canopy.

P**Perennial stream**

A stream or reach of a channel that flows continuously or nearly so throughout the year and whose upper surface is generally lower than the top of the zone of saturation in areas adjacent to the stream.

Persistent woodlands

These are long-lived pinyon-juniper woodlands that typically have sparse understories and occur on poor substrates in the plan area. On the Colorado Plateau this type can occur on more productive sites as well, and result in stands with large, dense trees; much of the literature comes from these woodlands.

Pinyon-Juniper Woodland expansion into Shrublands Phases

These are areas with variable tree densities and a successional dynamic between shrublands and trees. They occur on substrates that favor shrubs and tend to be on sites with less available moisture for trees. Tausch et al. (2009) have classified the stages of increase in tree density in three phases:

Phase I — the area is dominated by shrubs

Phase II — trees and shrubs are co-dominant

Phase III — trees are dominant, and typically the understory is very limited or nonexistent

Planned ignition

The intentional initiation of a wildland fire by a hand-held, mechanical, or aerial device where the distance and timing between ignition lines or points and the sequence of igniting them is determined by environmental conditions (weather, fuel, topography), firing technique, and other factors that influence fire behavior and fire effects (see prescribed fire).

Planning period

The lifetime of the plan. The time interval within the planning horizon that is used to show incremental changes in yields, costs, effects, and benefits.

Planning Rule

The 2012 Planning Rule provides the overarching framework for individual forests and grasslands in the National Forest System to use in developing, amending, and revising land management plans, which are also known as Forest Plans. The planning rule identifies a framework for revising land management plans that consists of three phases: assessment, plan revision, and monitoring.

The Forest Service is required by statute to have a national planning rule: the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976, requires the Secretary of Agriculture to issue regulations under the principles of the Multiple-Use Sustained-Yield Act of 1960 for the development and revision of land management plans.

Plant community

Any assemblage of plants that occur in the same area and form a distinct ecological unit.

Precommercial thinning

The selective felling, deadening, or removal of trees from a young stand maintaining a specific stocking or density stand management.

Prescribed fire

A wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire plan for which National Environmental Policy Act requirements (where applicable) have been met prior to ignition (see planned ignition).

Prescription

A planned sequence of vegetation management actions designed to change current stand structures to one that meets management goals

Project record

The documents and materials considered in the making of a Forest Plan, plan revision, or plan amendment. Also known as the planning record.

Projected timber sale quantity

The portion of the projected wood sale quantity that meets applicable timber utilization standards. In accordance with the National Forest Management Act and Planning Rule regulations, the quantity of timber that may be sold must be less than or equal to the sustained yield limit.

Projected wood sale quantity

The estimated output of timber and all other wood products, such as fuelwood, firewood, or biomass, expected to be sold during the plan period for any purpose on all lands in the plan area. This amount excludes output generated from salvage harvest, sanitation harvest, removal of trees to improve stand health, or removal to reduce an actual or anticipated spread of insects and disease.

Proposed action

In terms of the National Environmental Policy Act (NEPA), the project, activity, or decision that a Federal agency intends to implement or undertake, which is the subject of an environmental impact statement or environmental assessment.

Public access

Generally, refers to a road or trail route over which a public agency claims right-of-way for public use.

Public participation

Meetings, conferences, seminars, workshops, tours, written comments, responses to survey questionnaires, and similar activities designed and held to obtain comments from the public about Forest Service planning.

R**Range**

Land supporting native vegetation that is either grazed or has the potential to be grazed and manage as a natural ecosystem. Range includes grassland, grazable forestland, shrubland, and pastureland.

Range allotment

Rangelands are managed as allotments and pastures. An allotment is a designated area of land available for permitted livestock grazing. Grazing is authorized for a specified number and kind of livestock. It is the basic land unit used to facilitate management of the range resource on National Forest System lands administered by the Forest Service.

Range condition

The state of the plant community on a range site in relation to the potential natural community or the desired plant community for that site. It is typically rated in the general category of satisfactory or unsatisfactory.

Rangeland

Uncultivated land that will provide the necessities of life for livestock and wildlife.

Ranger district

Administrative subdivision of a national forest supervised by a district ranger who reports to the forest supervisor.

Rare plant species

A plant species that has received a NatureServe ranking of S1, S2, G1, or G2 and have fewer than five known occurrences on the GMUG.

Reclamation

Returning disturbed lands to a form and productivity that will be ecologically balanced and in conformity with a predetermined land management plan.

Reconstruction

Activities performed on an existing road or other facility to restore it to a specified standard.

Recreation opportunity spectrum (ROS)

Also known as recreation setting (see entry below). Allocations that identify a variety of recreation experience opportunities categorized into six classes on a scale from primitive to urban. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs, based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area, and the relative density of recreation use. The six classes are:

Primitive – Very high probability of experiencing solitude, self-reliance, and challenge; natural landscape with natural processes allowed to function; very low interaction between users; restrictions and controls not evident; access limited; generally cross-country travel.

Semiprimitive nonmotorized – Good probability of experiencing solitude, self-reliance, and challenges; natural primitive landscapes; some evidence of users; minimum subtle controls; access by low standard trails and cross-country travel; natural processes allowed to function with subtle vegetative alterations. Managed for nonmotorized use.

Semiprimitive motorized – Moderate probability for self-reliance and experiencing solitude away from travelways (roads/trails); risk associated with motorized equipment; predominantly natural landscapes; low concentration of users and interaction by users along travelways; minimum but subtle restrictions; vegetative alterations visually blend with the landscape.

Existing routes are designated for off highway vehicles and other high clearance vehicles. Mountain bikes and other mechanized equipment are present.

Roaded natural – Low opportunity to avoid other users; little opportunity for risk or challenge; substantial modified landscapes; moderate evidence and interaction of users; controls and restrictions present; variety of motorized users and access; various shapes and sizes of vegetative alterations that blend with the landscape. The road system is well defined and can accommodate sedan travel.

Rural – Good opportunity to affiliate with others; facilities important; self-reliance of little importance; altered landscapes but attractive; high interaction among users; obvious and prevalent controls; extensive motorized use; vegetation maintained. Rural settings represent most developed recreation sites.

Urban – Opportunity to affiliate with others important; outdoor skills associated with competitive events; landscapes extensively changed with dominant structures; large numbers of user interactions; intensive controls are numerous; motorized use prevalent, including mass transit; vegetation planted and maintained. Highly developed ski areas and resorts are examples of a typical urban setting on National Forest lands.

Recreation setting

The social, managerial, and physical attributes of a place that, when combined, provide a distinct set of recreation opportunities. The Forest Service uses the recreation opportunity spectrum to define recreation settings and categorize them into six distinct classes: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban.

Recreation site

A defined, public recreation area. The Forest Service uses two categories for recreation sites: dispersed and developed. Both types may have improvements needed to protect resources such as signs, road closure devices, bear resistant food storage devices, and/or sanitation facilities. Some recreation sites are designed and managed for overnight use and some are designed and managed for day-use only (e.g., interpretive signs at roadside pull-outs, trailheads at roadside pull-outs or at road closures, picnic areas or boat launches that are closed at night, ski areas that do not have overnight lodging).

Developed sites have agency improvements made out of manmade materials that are intended to provide for public recreation and user comfort/convenience. Examples on National Forest Service lands include, but are not limited to: ski areas, campgrounds, sites with cabins, huts, lodges, recreation residences, visitor centers, and trailheads.

Dispersed sites have minimal to no agency improvements made out of manmade materials. Dispersed sites may include outfitter camps or other primitive camping spots along a road, trail, or water body, or at a road closure.

Reforestation

Management activities used to increase or accelerate the establishment of forest cover to meet resource objectives.

Regeneration

Natural – A group or stand of young trees created from germination of seeds, sprouting, or suckering from existing trees on the site.

Artificial – A group or stand of young trees created by direct seeding or by planting seedlings or cuttings.

Regeneration harvest

Timber harvest system intended to create a new age class (see regeneration method).

Regeneration method

A cutting procedure by which a new age class is created. The major methods are clearcutting, seed-tree, shelterwood, selection, and coppice. Regeneration methods are grouped into four categories: coppice, even-aged, two-aged, and uneven-aged.

Region

An administrative unit within the National Forest System based on geographical location. Each of the nine Forest Service regional offices is supervised by a regional forester. The Rio Grande National Forest is part of the Rocky Mountain Region, also known as Region 2. The Rocky Mountain Regional Office is strategically located in Lakewood, Colorado, between the foothills of the Rocky Mountains and downtown Denver.

Rehabilitation

- 1) Actions taken to protect or enhance site productivity, water quality, or other values for a short period of time.
- 2) A short-term scenic condition objective used to restore landscapes containing undesirable visual or other resource impacts to the desired scenic or other acceptable quality level.

Research natural area

Designated areas of land established by the Chief of the Forest Service under 36 CFR 251.23 for research and educational purposes and to typify important forest and range types of the Forest, as well as other plant communities that have special or unique characteristics of scientific interest and importance.

Resilience

The ability of an ecosystem and its component parts to absorb, or recover from the effects of disturbances through preservation, restoration, or improvement of its essential structures and functions and redundancy of ecological patterns across the landscape.

Resistance

The capacity of ecosystems to tolerate disturbances without exhibiting significant change in structure and composition. The concepts of resistance and resilience are jointly referred to as resilience.

Responsible official

The Forest Service employee who has the delegated authority to make a specific decision. For example, the regional forester will select the preferred alternative for the Forest Plan.

Restore or restoration

Assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. It is an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity, and sustainability.

Revegetation

The reestablishment and development of a plant cover. This may take place naturally through the reproductive processes of the existing flora or artificially through the direct action of reforestation or reseeding.

Right-of-way

Land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project or facility passing over, upon, under, or through such land (36 CFR 251.51). The privilege that one person or persons particularly described may have of passing over the land of another in some particular line (FSH 2709.12 05 10).

Riparian area

A riparian ecosystem is a transition area between the aquatic ecosystem and the adjacent terrestrial ecosystem, identified by soil characteristics or distinctive vegetation communities that require free or unbound water (FS-990A). Riparian areas may be associated with lakes, reservoirs, estuaries, hot springs, marshes, streams, fens, wet meadows, and intermittent or permanent streams where free and unbound water is available. This habitat is transitional between true bottomland wetlands and upland terrestrial habitats, and while associated with watercourses, may extend inland or upland for considerable distances.

Riparian management zone

A stream and the area on either side of the stream extending from the edges of the active channel to the top of the inner gorge, or to the outer edges of riparian vegetation, or 100-foot slope distance (200 feet, including both sides of the stream channel), whichever is greatest.

Road

A motor vehicle route more than 50 inches wide, unless identified and managed as a trail.

Road maintenance level

Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria (FSH 7709.58, section 12.3). The maintenance levels are:

Maintenance level 1 – Intermittent service roads during the time they are closed to vehicular traffic. The closure period is 1 year or longer. Basic custodial maintenance is performed.

Maintenance level 2 – Roads open for use by high-clearance vehicles, minor traffic, no warning signs. Passenger car traffic is not a consideration.

Maintenance level 3 – Roads open and maintained for a prudent driver in a standard passenger car, low speed travel, warning signs provided. User comfort and convenience are not considered priorities.

Maintenance level 4 – Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds, single or double lane, aggregate or paved surface.

Maintenance level 5 – Roads that provide a high degree of user comfort and convenience, single or double lane, generally paved surface, or aggregate-surfaced with dust abatement.

Rotation

The planned number of years between the formation of a generation of trees and its final cutting at a specified stage of maturity.

Rural historic community

A nontribal community located in central and southeastern Utah or western Colorado whose members and their families have strong historical ties to lands now managed by the Manti-La Sal National Forest.

S

Salvage or salvage harvest

The removal of dead trees or trees damaged or dying because of injurious agents, other than competition, that recovers economic value that would otherwise be lost, or because the removal of the dead or damaged trees contributes to achieving plan desired conditions or objectives.

Sanitation or sanitation harvest

Intermediate harvest to remove trees to improve stand health by stopping or reducing the actual or anticipated spread of insects and diseases.

Savanna

Low to moderate pinyon-juniper densities with a near continuous grass layer where shrubs play a minor role. This type of savanna is currently most common outside the assessment area in the southwest with summer monsoon precipitation patterns. Age structures in current pinyon-juniper woodlands within the assessment area suggest this type of structure during the pre-settlement period, in western juniper in the northern part of the assessment area. From Romme et al.

Sawtimber

Larger diameter trees of sufficient size and quality to be manufactured into dimensional lumber products. Species and minimum diameters of sawtimber trees are established by regional timber markets.

Scale

The degree of resolution at which ecological processes, structures, and changes across space and time are observed and measured.

Scenic character

A combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place; scenic character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.

Scenic integrity objective

Scenic integrity objectives serve as the desired conditions for the scenic resources and represent the degree of intactness of positive landscape attributes. Scenic integrity objectives are categorized into five levels. The highest ratings are given to those landscapes where valued landscape attributes will appear complete with little or no visible deviations. Lower ratings are given to those landscapes where modifications will be more evident.

Very high – Landscape is intact with changes resulting primarily through natural processes and disturbance regimes.

High – Management activities are unnoticed, and the landscape character appears unaltered.

Moderate – Management activities are noticeable but are subordinate to the landscape character. The landscape appears slightly altered.

Low – Management activities are evident and sometimes dominate the landscape but are designed to blend with surroundings by repeating line, form, color, and texture of valued landscape character attributes. The landscape appears altered.

Very low – Human activities of vegetation and landform alterations may dominate the original, natural landscape character but should appear as natural occurrences when viewed at background distances.

Secure habitat

An area where wildlife retreat for safety when disturbance in their usual range is intensified, such as by logging activities or during hunting seasons.

Sedge

A grass-like plant with triangular stems and inconspicuous flowers, typically growing in wet ground.

Sediment

Material suspended in water or that has been deposited in streams and lakes.

Seedling or sapling

A forest successional stage in which trees are less than 5 inches in diameter.

Seedtree or seedtree harvest

The cutting of all trees except for a small number of widely dispersed trees retained for seed production and to produce a new age class in a fully exposed microenvironment.

Seral

The gradual supplanting of one community of plants by another, the sequence of communities being termed a sere and each stage seral (successional).

Seral stage

A phase in the sequential development of a climax community.

Shelterwood or shelterwood harvest

The cutting of most trees, leaving those needed to produce sufficient shade to provide a new age class in a moderated microenvironment.

Shrub

A forest successional stage in which shrubs are the dominant vegetation.

Silviculture

The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.

Site capability (also known as ecological response unit)

A unit of land that is homogenous in character such that similar units will respond in the same way to disturbance or manipulation. From: Society for Range Management. 1998. Glossary of terms used in range management, fourth edition. Edited by the Glossary Update Task Group, Thomas E. Bedell, Chairman. Used with permission.

Site preparation

Hand or mechanized manipulation of a site, designed to enhance the success of regeneration by modifying the soil, litter, or vegetation and creating microclimate conditions conducive to the establishment and growth of desired species. Methods include burning, chemical spraying, chopping, dicking, drainage, raking, and scarifying.

Skidding

Moving logs by sliding from stump to a collecting point.

Slope

The amount or degree of deviation from the horizontal or vertical.

Slope stability

The resistance of any inclined surface, as the wall of an open pit or cut, to failure by sliding or collapsing.

Snag

A standing, dead tree.

Social sustainability

The capability of society to support the network of relationships, traditions, culture, and activities that connects people to the land and to one another and supports vibrant communities.

Soil productivity

The capacity of a soil to support the growth of specified plants, plant communities, or a sequence of plant communities. Soil productivity may be expressed in terms of volume or weight/unit, area/year, percentage of plant cover, or other measures of biomass accumulation.

Soil survey

The systematic examination, description, classification, and mapping of soils in an area.

Spatial

Referring to the distance, interval, or area between or within things.

Special area

Area designated by law (by Congress) or statute or through administrative process (by the Secretary of Agriculture or a Forest Service official).

Special interest area

A type of management area designated by the forest supervisor for scenic, geologic, botanic, zoologic, paleontological, archaeological, historic, scenic, or recreational values, or combinations of these values. A special interest area is a type of special area designated through administrative process. Special interest areas are addressed in Forest Service Manuals 2360 and 2372.

Special use authorization or permit

A permit, term permit, lease, or easement that allows occupancy, use, rights, or privileges of National Forest System land.

Species

Organisms that successfully reproduce among themselves and cannot reproduce successfully with other organisms.

Stand

A community of trees or other vegetation sufficiently uniform in composition, constitution, age, spatial arrangement, or condition to be distinguishable from adjacent communities that form a silvicultural or management entity.

Standards

Principles specifying conditions or levels of environmental quality to be achieved. A mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. (36 CFR 219.7(e)(1) (iii))

Standards are required criteria for the design of projects and activities. Design criteria are the technical design details to ensure that projects and activities maintain or move toward the desired conditions, or at least to ensure that projects and activities do not preclude their maintenance or attainment. Design criteria provide the sideboards (i.e., define the limits) for projects and activities. Examples of other sources of constraints on the design of projects and activities include congressional direction, mineral leasing stipulations, regulations, timber sale contract clauses, and special use authorization standard clauses. In addition, the responsible official may develop project-specific design criteria to constrain a project. A standard differs from a guideline in that a standard is strict design criterion, allowing no variation, whereas a guideline allows variation if the result would be equally effective.

Stand Density Index

A measure of the stocking of a stand of trees based on the number of trees per unit area and diameter at breast height of the tree of average basal area.

Stewardship

Caring for the land and associated resources and passing healthy ecosystems to future generations.

Stipulation

A provision that modifies standard lease rights and is attached to and made a part of the lease.

Stocking

Live trees per acre needed to meet resource objectives as identified in the Forest Plan or through other management decisions.

Structural stage

Any of several developmental stages of tree stands described in terms of tree age or size and density. In general, the habitat structural stages developed by the Forest Service Rocky Mountain Region staff are used. This classification has different structural stages based on tree size (diameter at breast height) and tree canopy cover percent.

Structure

The horizontal and vertical physical elements of forests and grasslands and the spatial interrelationships of ecosystems.

Stubble

The basal portion of plants remaining after the top portion has been harvested. Also, the portion of the plants, principally grasses, remaining after grazing is completed.

Substrate

The rock material varying in size from boulders to silt that is found in the bed of rivers and streams.

Succession

The sequential process of long-term plant community change and development that occurs following a disturbance.

Successional stage (seral stage)

The relatively transitory communities that replace one another during development to potential natural community.

Suitable timber

Area that defines where timber harvest for the purpose of timber production may occur, subject to subsequent project-level, site-specific data and analysis. Timber harvest for purposes other than timber production may also occur here. Scheduled timber harvests occur on these lands, among other active management activities, to contribute to forestwide desired conditions and multiple use goals.

Suppression

The work of extinguishing a fire or confining fire spread.

Surface water

Water on the surface of the earth.

Sustainability

The capability to meet the needs of the present generation without compromising the ability of future generations to meet their needs.

Sustained yield

The amount of renewable resources that can be produced continuously at a given intensity of management.

Sustained yield of the several products and services

The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the national forests without impairment of the productivity of the land. (36 CFR 219.3)

Sustained yield limit

The amount of timber, meeting applicable utilization standards that can be removed from a forest annually in perpetuity on a sustained yield basis. It is the volume that could be produced in perpetuity on lands that may be suitable for timber production. Calculation of the limit includes volume from lands that may be deemed not suitable for timber production after further analysis during the planning process. The calculation of sustained yield limit is not limited by land management plan desired condition, other plan components, or the planning unit's fiscal capability and organizational capacity. The sustained yield limit is not a target but is a limitation on harvest, except when the plan allows for a departure. (FSH 1909.12 CH 60.5) -

T**Targeted grazing**

The planned use of grazing animals to control and manage noxious weeds.

Temporary road

A road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization. Temporary roads are not included in a national forest's transportation atlas.

Terrestrial ecosystem

A plant community that is not dependent on a perpetual source of water to grow.

Thinning

Intermediate treatment to reduce stand density or stocking levels to meet a variety of management objectives including increasing tree growth or vigor, improving stand health or species composition, reducing fuels, or improving wildlife habitat.

Threatened and endangered species

An endangered species is a plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range. A threatened species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Threshold

The point or level of activity beyond which an undesirable set of responses begins to take place within a given resource system.

Timber harvest

The removal of trees for wood fiber utilization and other multiple-use purposes.

Timber production

The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use.

Managing land to provide commercial timber products on a regulated basis with planned, scheduled entries.

Timber sale

Selling of forest products with monetary value to meet Forest Plan objectives, including providing raw material for both commercial manufacturing and personal use.

Trail

A route 50 inches or less in width, or a route greater than 50 inches wide that is identified and managed as a trail.

Travel management

Providing for safe, environmentally responsible, and customer-responsive movement of vehicles and people to and through public lands. Travel management decisions are not made by this Forest Plan.

U**Understory**

That portion of a plant community growing underneath the taller plants on the site.

Uneven-aged management

The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest

products. Cutting is typically regulated by specifying the number or proportion of trees of specific sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree and group selection. (36 CFR 219.3)

Unplanned ignition

The initiation of a wildland fire by lightning, volcanoes, or unauthorized or accidental human-caused fire (see wildland fire).

V

Vegetation management

Activities designed primarily to promote the health of forest vegetation in order to achieve desired results. When vegetation is actively managed, it is manipulated or changed by humans to produce desired results. Where active management of vegetation is required, techniques are based on the latest scientific research and mimic natural processes as closely as possible. Vegetation management is the practice of manipulating the species mix, age, fuel load, and/or distribution of wildland plant communities within a prescribed or designated management area in order to achieve desired results.

Viable population

A population of plants or animals large enough and distributed in such a way as to ensure its continued existence, despite all the hazards to survival such as illness, predators, old age, etc. throughout its existing range within the planning area.

Viewshed

The visible portion of the landscape seen from viewpoints. Viewpoints can include residences, recreational facilities, and travelways.

W

Water right

A property right granted by a state for the use of a portion of the public's surface water resource obtained under applicable legal procedures.

Waterbody

A body of water forming a physiographical feature, for example a lake, reservoir or pond.

Watershed

A region or land area drained by a single stream, river, or drainage network. It includes the interactions of surface and subsurface water systems as well as soil, vegetation, and wildlife.

Watershed Condition Class

Watershed condition classification is the process of describing watershed condition in terms of discrete categories (or classes) that reflect the level of watershed health or integrity.

Watershed Condition Framework

The Watershed Condition Framework (WCF) is a comprehensive approach for proactively implementing integrated restoration on priority watersheds on national forests and grasslands.

Wetlands

Those areas that are inundated or saturated by surface or groundwater at a frequency and duration to, under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (40 CFR 122. 2)

Wild, Scenic, and Recreational Rivers

A river or section of a river designated under the 1968 Wild and Scenic Rivers Act as wild, scenic, or recreational. Rivers may be designated by Congress or, if certain requirements are met, the Secretaries of Interior or Agriculture, as appropriate. Once designated under the Act, rivers receive special management direction that ensures the maintenance of the free-flowing nature and the outstanding natural, cultural, and recreational values of the river segment. Under the Act, river segments are required to be classified as wild, scenic, or recreational:

Wild Rivers – Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic Rivers – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational Rivers – Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Wilderness

All lands included in the National Wilderness Preservation System by public law; generally defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation.

Wildland fire

A general term describing any nonstructural fire that occurs in the wildland. Wildland fires are categorized into two distinct types:

Wildfires – Unplanned ignitions or prescribed fires that are declared wildfires.

Prescribed fires – Planned ignitions.

Wildland-urban interface (WUI)

The line, area, or zone where structures and other human developments meet or intermingle with undeveloped wildland or vegetation fuels. Describes an area within or adjacent to private and public property where mitigation actions can prevent damage or loss from wildfire.

Windthrow

The act of trees being uprooted by the wind.

Winter range

An area used by deer and elk during the winter months; generally, at lower elevations or south and west exposures.

Withdrawal

An action that restricts the use of public land and segregates the land from the operation of some or all the public land and mineral laws. Withdrawals are also used to transfer jurisdiction of management.

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