Chapter 4
Monitoring and Evaluation

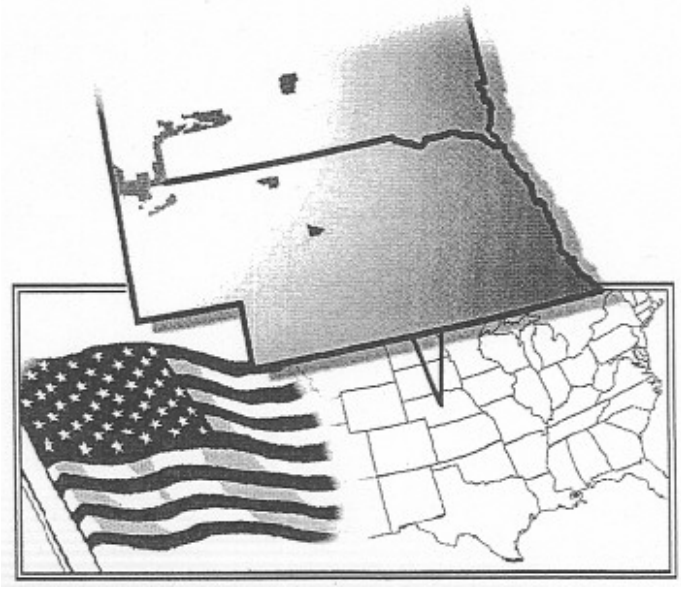


TABLE OF CONTENTS

CHAPTER 4 MONITORING AND EVALUATION

INTRODUCTION

Overview

The purpose of this chapter is to provide the support and direction to facilitate successful monitoring. In brief, the steps to successful monitoring are:

1. **Establish a Monitoring Budget:** As part of the annual program budgeting process, establish an annual monitoring budget to collect, manage, and evaluate data, coordinate with partners, produce the annual report, and fund the Monitoring ID Team.
2. **Identify a Monitoring ID Team:** At least one year in advance of the published monitoring report, establish an ID Team with the authority to coordinate and supervise monitoring activities, administer monitoring funding, evaluate the data collected and produce the annual monitoring report.
3. **Build a Monitoring Guide:** The ID Team will annually build, update, or validate a Monitoring Guide designed to facilitate data collection and storage on monitoring items using standardized monitoring protocols and corporate data/information storage.
4. **Find Cooperators:** The ID Team will find and manage cooperators who will aid in data collection and possibly data evaluation. Cooperators will play a key role in a successful monitoring effort.
5. **Establish an Annual Monitoring Work Plan:** The ID Team under the direction of the Forest/Grassland Leadership Team will build and work under a work plan with the budget provided. The project work plan will identify the monitoring questions to be addressed for the year, the funding available, where data on monitoring items will be collected, and who will have the responsibility to obtain the data.
6. **Manage the Collection & Storage of Data:** The ID Team will work with Forest Service employees and cooperators to see that data is collected using standard methods found in the Monitoring Guide and is entered into the appropriate corporate data storage system.
7. **Evaluate the Data:** The ID Team will evaluate the data collected with the goal of answering the monitoring questions.
8. **Publish & Distribute the Annual Monitoring Report:** The ID Team will write and distribute the annual monitoring report.

Monitoring Purpose

Effective Land and Resource Management Plan (LRMP) monitoring and evaluation fosters improved management and more informed planning decisions. It helps identify the need to adjust desired conditions, goals, objectives, standards and guidelines as conditions change. Monitoring and evaluation helps forests, grasslands, the Agency and the public determine how a LRMP is being implemented, whether plan implementation is achieving desired outcomes, and whether assumptions made in the planning process are valid.

Monitoring and evaluation are learning tools that form the backbone of adaptive management. With these tools, information is collected and compiled to serve as reference points for the future; new scientific understanding and technology, changes in law and policy and resource conditions, growing concerns, trends and changing societal values are incorporated into forest/grassland planning; and the scientific validity and appropriateness of assumptions used in the development of forest and grassland plans is evaluated. In short, they breathe life into a static document—the LRMP—to make it dynamic, relevant and useful.

Several kinds of activities can be referred to as "monitoring." Programmatic monitoring tracks and evaluates trends of ecological, social, or economic outcomes. Project implementation monitoring monitors compliance with LRMP standards and guidelines. Effectiveness monitoring evaluates how effective our management actions are at achieving desired outcomes. Validation monitoring verifies assumptions and models used in LRMP implementation. Monitoring may also address issues for large geographic areas of which a forest or grassland is a part. These types of monitoring are addressed in LRMPs.

Two other types of "monitoring": (1) tracking or development of administrative reports (plans for protection of historic sites, interpretive plans, plans to inventory a particular resource, or conservation strategies) and (2) tracking specific program outputs (such as miles of trail maintained, recreation visitor days, cubic feet of timber harvested, or acres of prescribed burn accomplished) are not appropriate for inclusion in the Monitoring Chapter of the LRMP. Tracking of outputs can be referenced using general terms in the LRMP and may be included in the annual monitoring plan or annual monitoring and evaluation report, as they are an important measure of how we use funds and are important to our publics.

As a forest or grassland plans and implements its monitoring and evaluation program, there are several important guidelines to consider. Monitoring should:

- Be purposeful and conducted to answer specific questions.
- Be done at the appropriate spatial and temporal scale to answer the question.
- Be done in collaboration with others (e.g., agencies, interested publics, researchers, and non-governmental organizations) to share the workload (including obtaining data from other sources), gain expertise, and build credibility and trust.
- Use the best available science and established protocols to collect and evaluate the data.
- Use modern information management techniques and tools.
- Apply stringent selection criteria so that a monitoring activity is only conducted if it is feasible, realistic and affordable.
- Emphasize evaluation as much as the collection of the data.

Monitoring and evaluation are conducted at several scales and for many purposes, each of which has different objectives and requirements. Monitoring requirements and tasks are developed to be responsive to the objectives and scale of the plan, program, or project to be monitored.

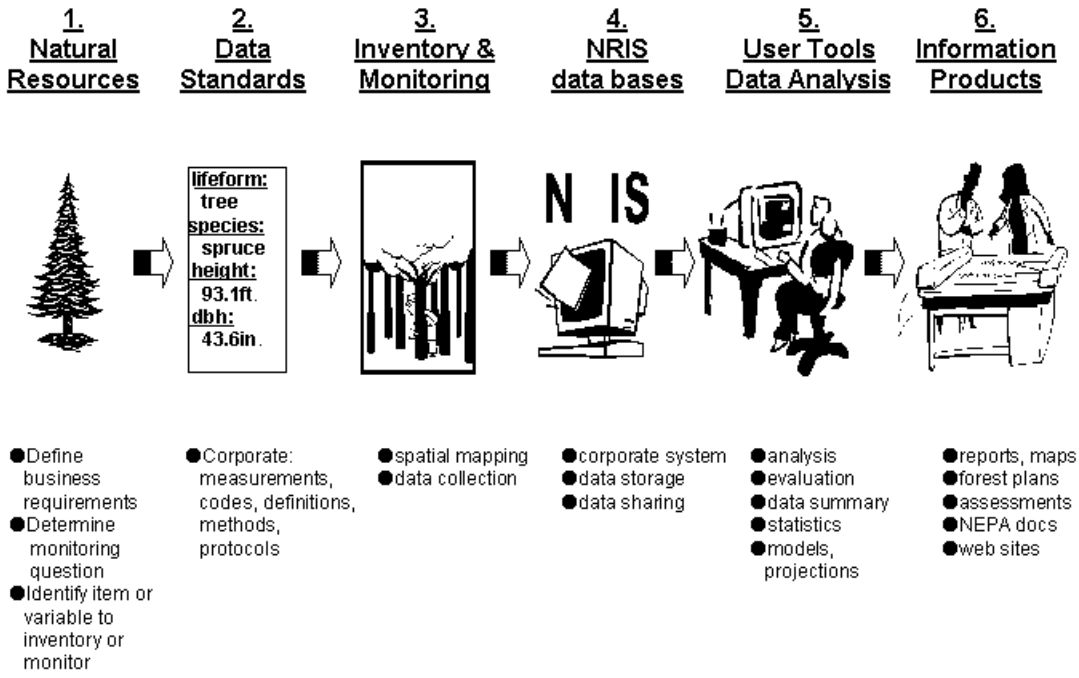
Monitoring and evaluation are separate, sequential activities required by NFMA regulations to determine how well objectives have been met and how closely management standards and guidelines have been applied. Monitoring generally includes the collection of data and information, either by observation or measurement. Evaluation is the analysis of the data and

information collected during the monitoring phase. The evaluation results are used to answer the monitoring questions, determine the need to revise or amend management plans or how they are implemented, and form a basis for adaptively managing the national grasslands and forests. Monitoring and evaluation keep the Revised Land and Resource Management Plan up-to-date and responsive to changing issues by verifying the effectiveness of management plan standards and guidelines and anticipated program and project effects on resources, and providing information for amendments to the management plan.

This chapter provides programmatic direction for monitoring and evaluating management plan implementation. Monitoring provides the Forest Supervisor with the information necessary to determine whether the Revised Management Plan is sufficient to guide management of the National Grasslands and Forests for the subsequent year or whether modification of the plan is needed.

Information Management

Monitoring and evaluation involves more than just collecting data. They encompass the full range of information management steps shown in the figure below.



Once the purpose or reason for monitoring has been determined (such as to answer a particular monitoring question), careful thought needs to go into identifying what feature or variable needs to be measured, as well as how it will be measured (protocol). If no protocols exist to acquire the needed information, research could be consulted to assist in protocol development.

After it is determined how information will be gathered, data collection begins. If data have been collected by others and can be obtained from other sources, then the Forest/Grassland can be spared the expense and effort of collecting them. Once data are obtained and have been edited to

satisfy quality standards, the data need to be stored in a corporate electronic database, such as NRIS or GIS. The data is then analyzed and interpreted.

The interpreted information is evaluated by the ID Team to answer the monitoring question and give it meaning in the context of the LRMP. A variety of analytical tools and evaluation procedures are available to interpret the data. The results are reported to the Forest/Grassland Leadership Team to consider and act on as well as documented in the annual monitoring and evaluation report. Monitoring data, evaluation results and the annual report should be accessible to the public electronically, preferably via the Internet.

Reasons for Monitoring (Monitoring Drivers)

The National Forest Management Act (NFMA) requires national forests and grasslands to do specific monitoring tasks. The level and intensity of any additional monitoring is dependent on available staffing, funding and forest or grassland priorities.

Following is a list of reasons (monitoring drivers) why certain items are included in a LRMP:

- Legal and regulatory requirements
- Forest Service Manual direction
- Tracking forest/grassland desired conditions, goals and objectives
- Validation of models/assumptions
- Tracking agency expectations
- Tracking public expectations/issues
- Tracking LRMP standards and guidelines
- Contributions to broad-scale monitoring
- Court rulings

Legal drivers include regulations at 36 CFR 219 that describe NFMA monitoring requirements. Some of these requirements provide guidance for developing the monitoring program while others include specific compliance requirements. The following regulations specify the minimum requirements for monitoring.

> ***36 CFR 219.7(f)*** A program of monitoring and evaluation shall be conducted that includes consideration of the effects of National Forest management on land, resources, and communities adjacent to or near the National Forest being planned and the effects upon National Forest management of activities on nearby lands managed by other Federal or other government agencies or under the jurisdiction of local governments.
>
> ***36 CFR 219.11 (d)*** Monitoring and evaluation requirements that will provide a basis for a periodic determination and evaluation of the effects of management practices.
>
> ***36 CFR 219.12 (k)*** Monitoring requirements identified in the LRMP shall provide for:
>
> 1. A quantitative estimate of performance comparing outputs and services with those projected by the LRMP.
> 2. Documentation of the measured prescriptions and effects, including significant changes in productivity of the land.

3. Documentation of costs associated with carrying out the planned management prescriptions as compared with costs estimated in the LRMP.
4. A description of the following monitoring activities:
    - The actions, effects, or resources to be measured and the frequency of measurements.
    - Expected precision and reliability of the monitoring process.
    - The time when evaluations will be reported.
5. A determination of compliance with the following standards:
    - Lands are adequately restocked as specified in the LRMP.
    - Lands identified as not suited for timber production are examined at least every 10 years to determine if they have become suited; and that, if determined suited, such lands are returned to timber production.
    - Maximum size limits for harvest areas are evaluated to determine whether such size limits should be continued.
    - Destructive insects and disease organisms do not increase to potentially damaging levels following management activities.

36 CFR 219.19 (a) (6) Population trends of the management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish and wildlife agencies, to the extent possible.

36 CFR 219.21 (g) Forest planning shall evaluate the potential effects of vehicle use off roads and, on the basis of the requirements of 36 CFR 295…, classify areas and trails of National Forest System lands as to whether or not off-road vehicle use may be permitted.

Definitions

Monitoring Questions: Specific monitoring questions are developed to ensure that monitoring and evaluation address information essential to measuring LRMP accomplishment and effectiveness. These questions help identify issues of concern and reveal how they are changing. The evaluation process (discussed below) determines whether the observed changes are consistent with LRMP desired future conditions, goals, objectives and what adjustments may be needed.

Monitoring Items: A monitoring item, or data element, is a quantitative or qualitative parameter that can be measured or estimated. One or more monitoring items are selected for the purpose of answering a monitoring question. A particular monitoring item may be used to answer more than one monitoring question. Potential monitoring items are listed in the LRMP as part of the accompanying table of monitoring questions. These are the thought to be the best items needed to answer the questions, but they are subject to change as the monitoring strategy is implemented. Any changes to the list of potential monitoring items will be reflected in the Monitoring Guide or Annual Monitoring Work Plan that accompany this LRMP. Each monitoring item has an associated unit of measure, such as acre, mile, etc. Examples of monitoring items with their associated unit of measure include acres and location of soils

improved or number of degraded water bodies restored on National Forest System land. Details on the units of measure are shown in the Monitoring Guide.

Monitoring Methods: Monitoring methods are developed in the Monitoring Guide, and may change based on changes in technology, staffing, budgets and issues. Only standardized protocols will be used in collecting monitoring item data. Protocols will be peer reviewed as needed.

Precision/Reliability: The precision and reliability with which each Forest/Grassland program or activity is monitored depends on the particular program or activity to be monitored. Two classes of precision and reliability are recognized:

Class A: These methods are generally well accepted for modeling or measuring the resource or condition. They produce repeatable results and are often statistically valid. Reliability, precision and accuracy are very good. The cost of conducting these measurements is higher than other methods. These methods are often quantitative in nature.

Class B: These methods are based on project records, communications, on-site ocular estimates, or less formal measurements like pace transects, informal visitor surveys, air photo interpretation and other similar types of assessments. Reliability, accuracy and precision are good, but usually less than Class A. Class B methods are often qualitative in nature, but still provide valuable information on the status of resource conditions.

Scale: Scale describes the level of analysis with respect to land size. This measure is important in describing effects dealing with habitat heterogeneity and viability issues; as well as, describing cumulative effects of management actions. Examples include: 6^{th} order hydrologic code, geographic area, administrative unit, or landscape (grassland-wide).

Frequency: Frequency describes the timing of monitoring and evaluation efforts over time. Examples include: annually, every five years, or every ten years.

Monitoring Priorities

After monitoring questions are developed, a screening process sorts the more significant questions from the less significant to ensure efficient use of limited resources—time, money and personnel. The priority of a question may affect the intensity or extent of associated monitoring activities. Following is a list of questions used in the screening process with a brief explanation or example:

1. **Is there a high degree of uncertainty associated with management assumptions?** *Examples:* (1) a new way of doing something where there is limited experience with the new technique; (2) actions taken in response to an unprecedented situation; (3) a lack of data for a particular resource response to a management action.
2. **Is there a high degree of disparity between existing and desired conditions?** *Examples:* (1) a particular habitat component is at a much lower level than desired; (2) the amount of use of a particular resource or use at a particular location is much higher than desired.

3. **Are proposed management activities likely to affect resources of concern?** There may be other forces affecting a resource much more significantly than anything the Forest Service does. Also, there may be portions of the landscape where no management activities are planned. An efficient monitoring strategy will focus on those circumstances where management activities are expected to have a discernable outcome.
4. **What are the consequences of not knowing resource conditions?** *Examples:* (1) if a species is at risk, consequences could be high, whether or not management activities are likely to affect it; (2) if a relationship with cooperators or local government is at risk due to a management activity, consequences could be high (in this case, a *human* resource).
5. **Will monitoring respond to a key issue?** Key issues identified through scoping may warrant monitoring *even if* they are (1) well understood, (2) the existing condition is good and (3) management activities will have little impact. Monitoring may be necessary for educational and/or accountability purposes.
6. **In addition to the above, can the question be cost effectively answered?** If the cost of answering the question is especially high in regard to benefits, or if an adequate monitoring method cannot be developed, the resource in question may be more appropriately studied by another entity, such as Forest Service research or private educational institutions.

Research Contributions

Research needs are identified during the development of LRMPs. Any additional research needs are identified during monitoring and evaluation of the plan as it is implemented and in the annual monitoring and evaluation reports. The Regional Forester evaluates any research needs for inclusion in the Regional research program proposal, which is used by Forest Service Research and Development as input for determining priorities for research funding at the regional and national levels.

Monitoring Guide

The Monitoring Guide (currently under development) provides the specific methodologies, protocols and administrative information associated with each monitoring item described in a LRMP. The guide is flexible and may be changed as new methodologies and techniques for monitoring are developed and corporately approved. While the guide uses information in the LRMP, it is not part of the LRMP; therefore, it may be changed without amending the LRMP.

Specific information for each monitoring item in the Monitoring Guide should include the following:

1. Resource or condition being monitored
2. Monitoring question
3. Monitoring Driver
4. Cooperators
5. Monitoring Items (Information/Indicators)

A. Metadata of data collection
   - Scale
   - Unit of measure
   - Precision and reliability (This must also be in the LRMP per 36 CFR 219.12(k)(4)(ii))
   - Quality Assurance / Quality Control
   - Methods (i.e., standard, approved protocols)
   - Frequency of measurement
   - Who collected? When collected?
   - Reporting period (This must also be in the LRMP per 36 CFR 219.12(k)(4)(iii))
   - Information management (description of how data will be stored and made accessible)

6. Responsibility
7. Cost
8. Evaluation Process

Annual Monitoring Work Plan

An annual monitoring plan of operations, with a list of monitoring items, is prepared each year by October 1. Methods and protocols for each monitoring item are derived from the Monitoring Guide.

Monitoring items are selected through interdisciplinary team coordination, budget constraints and forest and or grassland leadership direction. Monitoring drivers and priority considerations will help in the selection process.

The Forest/Grassland interdisciplinary team (ID Team) reviews the previous years' monitoring and evaluation results to determine if methodology and protocols in the Monitoring Guide are effective and efficient; if not, changes may be made to the Monitoring Guide.

A strategy for involving the public and other agencies in our monitoring activities should be considered each year. This may be accomplished through partnerships with interest groups, volunteer groups, other federal, state and local agencies, and universities. Monitoring information trips for the public could also be scheduled to demonstrate monitoring methods. The public is informed about LRMP monitoring through news releases and the Internet.

The monitoring plan includes direction for preparing the current year's annual monitoring and evaluation report and lays the framework for information required for five- and 10-year evaluation reports. Results of this plan will show priority and budget trends that guide future priorities and budgets.

The following is an example of annual monitoring plan items that will be monitored in FYxx according to direction in the Monitoring Guide (currently being developed):

Monitoring Activity	Monitoring Guide Page Reference	Responsible Person
What is the increase/decrease in noxious weeds?	--	District through Forest/Grassland Range Group Leader
Reforestation: Five years after regeneration harvest, are lands adequately restocked?	--	District through Forest Silviculturist

Each Forest/Grassland ID Team member coordinates the data collection for his or her respective resource area. The data is then interpreted and contributes to the annual monitoring and evaluation report prepared by the team the following fiscal year.

Evaluation Process

The Forest/Grassland ID Team evaluates the data and information collected through monitoring. Successful adaptive management depends on collectively evaluating the effectiveness of management activities in moving the Forest or Grassland toward desired conditions. The "desired condition" (or other driver) that prompted the development of a monitoring question is typically associated with one or more monitoring items. Whereas the desired condition may be conceptual or visionary in nature, the monitoring items are generally a measurable aspect of the desired condition.

Evaluation is the process of transforming data into information—a value-added process. It is a process of synthesis that brings together value, judgment and reason with monitoring information to answer the question, "So what?" and perhaps, "Why?"

Evaluation requires context*:* A sense of the history of the place or the circumstances (temporal and spatial context) are important to the evaluation of management activities.

Evaluation requires base line or reference information: Evaluation will describe movement from a known point (base line or reference condition) either toward or away from a desired condition. The desired conditions may or may not ever be fully achieved, but it is important to know if management activities are heading in the right direction.

Evaluation produces information that is used to infer outcomes and trends: Conclusions will be drawn from an interpretation of evidence.

The evaluation process will be documented: Evaluation may occur through a variety of means such as facilitated group interactions, scaled survey instruments, or through computer assisted technology (e.g., statistical or analytical tools or internet forums). The processes used will be described in the annual monitoring and evaluation report.

Evaluation results are documented in an annual monitoring and evaluation report: The responsible official (i.e., the Forest/Grassland Supervisor) uses this report as a tool to initiate change.

Annual Forest/Grassland Monitoring and Evaluation Report

The annual monitoring and evaluation report is a Management Attainment Report (MAR) requirement and an output target for forests and grasslands. Besides fulfilling these requirements, these reports serve several purposes, including:

- Documenting monitoring and evaluation accomplishments
- Providing an accountability tool for monitoring and evaluation expenditures
- Providing an assessment of the current state of the forest or grassland
- Providing adaptive management feedback to responsible officials of any needed changes to the LRMP or adjustments to management actions
- Describing to the public how their public lands are being managed

The monitoring and evaluation report is based on monitoring data and information gathered the previous fiscal year. It evaluates LRMP implementation and provides an overview of resource conditions and trends as they relate to indicators and criteria for sustainability with specific attention on the effects of management on ecological system structure and function. The following items are included in the report:

1. Key findings, what has changed, what the Forest or Grassland Supervisor is committing to do about them (signed and dated)
2. Chapter 1. Setting the Context. An overview of past, present and desired conditions is presented which may be summarized from broad scale assessments, projects, programs, policy and law. Organize by the Montreal criteria of sustainability where practicable. These seven criteria are: conservation of biological diversity; maintenance of productive capacity of ecosystems; maintenance of forest ecosystem health and vitality; conservation and maintenance of soil and water resources; maintenance of forest contribution to global carbon cycles; maintenance and enhancement of long-term socioeconomic benefits to meet the needs of society; and legal, institutional and economic framework for conservation and sustainable management.
3. Chapter 2. Monitoring Results. The monitoring results are described, organized by GPRA goals where practicable. These goals are: ecosystem health; multiple benefits to people; scientific and technical assistance; and effective public service.
4. Chapter 3. Evaluation and Action Plan. This is a synthesis of results, interpreted to draw conclusions about whether or not we are moving toward the forest or grassland goals and desired conditions.
5. Appendix.

Monitoring items reported on in any given year are determined by the reporting frequency detailed in the chart of monitoring questions in the LRMP.

MONITORING STRATEGY

The monitoring strategy contains all the relevant Land & Resource Management Plan monitoring called for by the monitoring drivers. The available monitoring budget will in all likelihood require a significantly smaller monitoring program in any given year than the table below presents. It is the monitoring items not the monitoring questions that are the major cost factor. The monitoring item initiates the data collection and a single monitoring item may answer several monitoring questions. Cooperators can greatly expand the annual monitoring program and stretch a Forest or Grassland's available monitoring budget many fold.

In almost all cases, it will be necessary for the Forest/Grassland Leadership Team in conjunction with the Monitoring ID team to prioritize what will be monitored in any given year based on the monitoring drivers, monitoring priorities, the accomplishments of the previous year's monitoring, and the urgency of a monitoring question.

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Effectiveness Monitoring						
Goal 1.a Objective 2, 3	**Riparian 1:** To what extent are perennial streams in proper functioning condition and riparian areas and wooded draws regenerating?	Likely to affect.	Miles & location of perennial streams not meeting, making measurable progress towards, or meeting proper functioning condition. Percent of riparian areas and wooded draws that are regenerating or making measurable progress towards regeneration.	A	Geographic	Five years
Notes: Livestock grazing, mining, timber harvesting and other management activities can affect riparian area recovery and condition. The monitoring items address the physical characteristics of drainages and watersheds and whether shrubs and trees are regenerating as evidenced by stand replacement.						
Goal 1.a Objective 1	**Soil 1:** To what extent have soils eroded or disturbed by Forest Service management or permitted activities been restored?	Likely to affect.	Acres & location of soils eroded, disturbed, or restored by Forest Service management or permitted activities.	B	Geographic	Five years

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Notes: Livestock grazing, mining, timber harvesting and other ground disturbing activities can affect soil condition.						
Goal 1.a Objective 1	**Watershed 1:** To what extent has water quality condition on watersheds containing National Forest System lands been restored, maintained or improved?	Likely to affect.	Sixth level watersheds in Condition Class I, II, & III	A	Geographic	Five years
Notes: Livestock grazing, mining, timber harvesting or ground disturbing activities can affect watershed condition.						
Goal 1.a Objective 1	**Watershed 2:** To what extent have waterbodies on National Forest System lands that have been degraded by Forest Service permitted or management actions been restored?	Likely to affect.	Number of degraded versus total water bodies on National Forest System Lands.	B	Geographic	Five years
Notes: Livestock grazing, mining, timber harvesting or ground disturbing activities can affect waterbody condition.						
Goal 1.a Objective 4	**Watershed 3:** To what extent have instream flows been assured to provide adequate water for fisheries and other riverine flora and fauna in streams and rivers with high resource values?	Great consequences	Name and location of streams & rivers having high resource values and the extent instream flows are maintained or improved. Incidents of damaging low stream flows.	A	Geographic	Five years
Notes: Fisheries and the ecosystem supporting them can be destroyed if water is not available.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Goal 1.a Objective 5	**Watershed 4:** To what extent have surface water, sub-surface flows, and aquifers been protected from contamination from abandoned wells.	Likely to affect.	Number of abandoned wells properly plugged vs. number not properly plugged, Incidents of aquifer cross contamination.	B	Administrative unit wide	Annually
Notes: It is important to prevent aquifer contamination from Forest Service management actions.						
Legal: 36 CFR 219.19(a)(6); 36 CFR 219.20; 36 CFR 219.27(5 and 6); Goal 1.b Objectives 2 & 6	**MIS 1:** What is the potential habitat capability for each management indicator species?	High condition disparity; Viability, Great consequences; Key issue	Acres and distribution of potential habitat	A	Geographic area wide	Ten years
Notes: Selected management indicator species include greater prairie chicken, sage grouse, plains sharp-tailed grouse, black-tailed prairie dog, and pygmy nuthatch. Determining and identifying potential habitat for each management indicator species is a regulatory requirement under NFMA. Reference areas may be needed to determine potential habitat capability for some management indicator species. .						
Legal: 36 CFR 219.19(a)(6); 36 CFR 219.20; 36 CFR 219.27(5 and 6); Goal 1.b Objectives 2 & 6	**MIS 2:** What is the current habitat suitability for each management indicator species?	High condition disparity; MIS for key issue (grassland vegetation conditions)	Current condition and trend of key habitats for each Management Indicator Species; Habitat suitability evaluation ratings	A	Geographic area wide	Five years
Notes: Evaluating the current condition and trend of key habitats for each management indicator species is a regulatory requirement under NFMA. Monitoring of MIS habitat is a high priority						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Legal: 36 CFR 219.19(a)(6); 36 CFR 219.20; 36 CFR 219.27(5 and 6); Goal 1.b Objectives 2 & 6	**MIS 3:** What are the long-term population trends for each management indicator species and the relationships between long-term population trends and the effects of management activities on habitats on NFS lands?	High condition disparity; Viability, Great consequences; Key issue	Long-term population trends; Habitat suitability evaluation ratings	A	Geographic area wide	Five years
Notes: Determining long-term populations trends for each management indicator species is a regulatory requirement under NFMA. The relationships between long-term trend and changes in habitat quality and quantity as a result of management activities also needs to be evaluated. Monitoring of MIS populations and habitat is a high priority						
USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(6); Goal 1.b Objectives 1, 2, 4 & 7	**T&E 1:** To what extent are NFS lands and their management contributing to the recovery and viability of black-footed ferrets?	Key issue (recovery and viability); Great consequences	Number of ferrets released; Survival, Dispersal and reproduction statistics; Population trend; Habitat suitability/capability evaluation ratings. (See also T&E: under Implementation Monitoring)	A	Geographic areas: Wall Southwest; Fall River Southeast; Broken Hills; Cellars Rosecran	Annually
Notes: The black-footed ferret is endangered. A recovery plan has been prepared and the Forest Service is implementing recovery actions identified in the plan on the National Grasslands. National Grasslands can play a significant role in the recovery of this species. Monitoring of black-footed ferret populations and habitat is a high priority.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(5); Goal 1.b Objectives 1, 2, 4, 7, & 9	**T&E 2:** To what extent are NFS lands and their management contributing to the recovery and viability of blowout penstemon?	Key issue (recovery and viability); Great consequences	Populations; Number of plants transplanted; Survival and reproduction statistics; Evidence of seed set and reproduction; Distribution (See also T&E: under Implementation Monitoring)	A	Geographic Areas: Bessey and McKelvie	Annually
Notes: Blowout Penstemon is a threatened plant species mostly restricted to the Nebraska Sand Hills. A recovery plan has been prepared and the Forest Service is implementing recovery actions identified in the plan on the Nebraska National Forest. Additional recovery opportunities occur on the Samuel R. McKelvie National Forest. Stock for introductions in suitable habitat is produced in greenhouses at the University of Nebraska. Monitoring of blowout penstemon populations and habitat is a high priority.						
Migratory Bird Treaty Act; Bald and Golden Eagle Protection Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(6); Goal 1.b Objectives 1, 2, 4 & 7	**T&E 3:** To what extent are NFS lands and their management contributing to the recovery and viability of bald eagle?	Key issue (recovery and viability); Great consequences	Number of nesting attempts; Statistics on nest success; Number of roost sites; Habitat suitability/capability evaluation ratings (See also T&E: under Implementation Monitoring)	A	Administrative unit wide	Annually

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Notes: The bald eagle is a threatened species that uses isolated trees, pine forests and riparian woodlands primarily for roosting. As populations recover, an increasing number of eagle pairs are being observed in the planning area and future successful nesting is anticipated on some of the national grasslands and forests. Wintering and migrating bald eagles are also seen hunting over prairie dog colonies. A recovery plan has been prepared. Conservation measures on the national grasslands and forests primarily consists of managing for regeneration of woodlands, reducing disturbances and developments in bald eagle habitat, and expanding prairie dog populations. Monitoring of bald eagle populations, nesting attempts and habitat is a high priority.						
USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(6); Goal 1.b Objectives 1, 2, 4 & 7	**T&E 4:** To what extent are NFS lands and their management contributing to the recovery and viability of the American burying beetle?	Key issue (recovery and viability); Great consequences	Documentation of observations. (See also T&E: under Implementation Monitoring)	A	Geographic Areas: Bessey and McKelvie	Annually
Notes: American burying beetle is an endangered invertebrate that occurs on the Nebraska National Forest and is expected to occur on the Samuel R. McKelvie National Forest. A recovery plan has been prepared. Unfortunately, information on the important habitat relationships in this part of the species range and how land uses influence the species is limited. Management at this time on NFS lands is limited mostly to inventory to document the species abundance and distribution. However, based on information in the recovery plan, management to increase and maintain prairie grouse species, a favored carrion source, may be beneficial but this is still highly speculative. Monitoring to determine the distribution, relative abundance and preferred habitats of this species is a high priority.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Migratory Bird Treaty Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(6); Goal 1.b Objectives 1, 2, 4 and 7	**T&E 5:** To what extent are NFS lands and their management contributing to the recovery and viability of whooping crane?	Key issue (recovery and viability); Great consequences	Documentation of observations. (See also T&E: under Implementation Monitoring)	A	Administrative unit wide	Annually
Notes: The whooping crane is an endangered species and a recovery plan has been prepared. However, whooping crane use of the national grasslands and forests is rare, incidental and unpredictable. Monitoring is limited to documenting observations.						
Migratory Bird Treaty Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(6); Goal 1.b Objectives 1, 2, 4 & 7	**T&E 6:** To What Extent are NFS Lands and Their Management Contributing to the Recovery and Viability of Mountain Plover?	Key Issue (recovery and viability); Great consequences	Populations; Distribution; Acres of habitat improvement; Reintroductions; Survival, Dispersal and reproduction statistics; Habitat suitability/capability evaluation ratings. (See also T&E: under Implementation Monitoring)	A	Geographic Areas: Oglala; Fall River Southeast; & Fall River West	Annually
Notes: Mountain plover is proposed as a threatened species for protection under ESA. It occurs on the Thunder Basin National Grassland and potential habitat may occur on the Oglala and Buffalo Gap National Grasslands. A recovery plan has not been prepared for the species but interim conservation measures have been developed through consultation with U.S. Fish and Wildlife Service. Nesting and brooding habitat for this species consists primarily of prairie dog colonies and heavily grazed or recently burned grasslands. Conservation measures primarily involve expanding and maintaining prairie dog populations, livestock grazing management, prescribed burning and managing disturbances and development in nesting and brooding habitat. Monitoring of mountain plover populations and habitat is a high priority.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(5); Goal 1.b Objectives 1, 2, 4, 6, 7, & 9	**T&E 7**: Does Ute ladies' tresses or potential habitat for the species occur on the NFS lands within the planning area?	Key Issue (recovery and viability); Great consequences	Documentation of inventory results. Acres inventoried using target survey protocols; Acres of potential habitat; Acres of occupied habitat (See also T&E: under Implementation Monitoring)	A	Geographic Areas: Fall River Southeast, West and Northeast	Annually
Notes: This species is a threatened species, and a draft recovery plan has been prepared. The occurrence of this species on the Buffalo Gap National Grassland has not been documented. If this species or potential habitat is found on these areas, FS will consult with U.S. Fish and Wildlife Service for additional guidance. Inventories to determine if the species or potential and suitable habitat exists on the national grasslands are a high priority.						
Migratory Bird Treaty Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(5 & 6); Goal 1.b Objective 2, 3, 4, 7, 8 & 9	**Viability 1:** To what extent are National Forest System Lands and their management contributing to the viability of sensitive plant and animal species that are generally found in grassland and sagebrush habitats?	Key issue (Viability); Great consequences	Populations; Distribution; Reintroductions; Transplants; Survival, Dispersal and reproduction statistics; Acres of habitat improvement; Grassland plant composition and vegetation structure accomplishments; habitat suitability evaluation ratings for MIS	A	Administrative unit wide	Five years
Notes: Some of the species that could be influenced by management activities and land uses in these habitats include: Barr's milkvetch, Dakota buckwheat, Tawny crescent butterfly, Regal fritillary butterfly, Greater prairie chicken, Sage grouse, Long-billed curlew, Upland sandpiper and Swift fox. Monitoring of populations and habitats of those sensitive species that are endemic or at higher risk (outcomes 3 through 6) is a high priority.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Migratory Bird Treaty Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(5 & 6); Goal 1.b Objective 2, 3, 4, 7, 8 & 9	**Viability 2:**To what extent are National Forest System Lands and their management contributing to the viability of sensitive plant and animal species that are generally found in riparian and wetland habitats?	Key issue (Viability); Great consequences	Populations; Distribution; Reintroductions; Transplants; Survival, Dispersal and reproduction statistics; Acres of habitat improvement; Reintroductions; Transplants, Survival and reproduction statistics; Groundwater levels; Riparian and woody regeneration accomplishments; Wetlands vegetation/habitat management accomplishments; Water management accomplishments	A	Administrative unit wide	Five years
Notes: Some of the species that could be influenced by management activities and land uses in these habitats include: American bittern, Trumpeter swan, Yellow-billed cuckoo and Loggerhead shrike. Monitoring of populations and habitats of those sensitive species that are endemic or at higher risk (outcomes 3 through 6) is a high priority.						
USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(5 & 6); Goal 1.b Objectives 2, 3, 4, 7, 8 & 9	**Viability 3:**To what extent are National Forest System Lands and their management contributing to the viability of sensitive plant and animal species that are found in aquatic habitats?	Key issue (viability); Great consequences	Populations: Relative abundance; Distribution; In-stream flow	A	Administrative unit wide	Five years
Notes: Some of the species that could be influenced by management activities or land uses include: flathead chub and northern leopard frog. Monitoring of populations and habitats of those sensitive species that are endemic or at higher risk (outcomes 3 through 6) is a high priority.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Migratory Bird Treaty Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(5 & 6); Goal 1.b Objective 2, 3, 4, 7, 8 & 9	**Viability 4:** To what extent are National Forest System Lands and their management contributing to the viability of sensitive plant and animal species that are generally found in forested habitats?	Key issue (Viability); Great consequences	Populations; Distribution; Acres of habitat improvement; Snag statistics; Forest vegetation/habitat management accomplishments; habitat suitability evaluation ratings for MIS	A	Administrative unit wide	Five years
Notes: Some of the species that could be influenced by management activities in these habitats include: Northern goshawk, Merlin, Pygmy Nuthatch, Lewis woodpecker, and Fringed-tailed Myotis. Monitoring of populations and habitats of those sensitive species that are endemic or at higher risk (outcomes 3 through 6) is a high priority.						
Migratory Bird Treaty Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(6); Goal 1.b Objective 2, 3, 4, 7, 8 & 9	**Viability 5:** To what extent are National Forest System Lands and their management contributing to the viability of sensitive animal species that are heavily dependent on prairie dog colony habitat?	Key issue (viability); Great consequences	Populations; Distribution; Reintroductions; Survival, Dispersal and reproduction statistics; Prairie dog colony statistics; habitat suitability evaluation ratings for MIS	A	Administrative unit wide	Five years
Notes: Some of the species that could be influenced by management activities and land uses in these habitats include: Western burrowing owl, Ferruginous hawk, and Black-tailed prairie dog. Monitoring of populations and habitats of those sensitive species that are endemic or at higher risk (outcomes 3 through 6) is a high priority.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Migratory Bird Treaty Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.27(5 & 6); Goal 1.b Objective 2, 3, 4, 7, 8 & 9	**Viability 6:** To what extent are National Forest System Lands and their management contributing to the viability of sensitive plant and animal species that are generally found in special habitats like caves, cliffs, buttes, blowouts, and barren habitats?	Key issue (viability); Great consequences	Populations; Distribution; Reintroductions; Transplants; Survival, Dispersal and reproduction statistics; vegetation/habitat management accomplishments	A	Administrative unit wide	Five years
Notes: Some of the sensitive species that could be influenced by management activities and land uses in these habitats include: Dakota buckwheat, Barr's milkvetch and Bighorn sheep. Monitoring of populations and habitats of those sensitive species that are endemic or at higher risk (outcomes 3 through 6) is a high priority.						
36 CFR 219.19 and 219.27(6); Goal 1.b	**Viability 7:** To what extent has cooperative agreements and the landownership adjustment program been effective in reducing private land conflicts involving prairie dogs and enhancing long-term opportunities for development of prairie dog colony complexes in the priority National Grassland areas.	Key issue (viability and biological diversity); Legal issue; Great consequences	Number of conflict situations resolved; Additional acres of potential or current prairie dog habitat under federal ownership or cooperative agreements	A	Geographic areas: Oglala; Fort Pierre;	Five years
Notes: Landownership adjustments and cooperative agreements provide the key to long-term opportunities for expanding prairie dog populations and for reducing conflicts over prairie dog management.						
36 CFR 219.20; Management Areas 3.58 & 3.51	**Wildlife 1:** Is habitat effectiveness on designated big game range being maintained or enhanced?	Recreational and economic issue and cooperative program with state wildlife agencies	Habitat effectiveness evaluations	A	MA 3..51	Five years

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Notes: Big game viewing and hunting are popular recreational activities on these lands and both contribute to the economic diversity of local and state economies. Management of designated big game ranges on NFS lands can help meet big game objectives established by State Wildlife Agencies. Land uses and developments on these lands can have significant effects on big game habitat.						
Legal 36 CFR 219.7(f); Goal 1.c Objective 5, Goal 4.b Public & Organizational Relations Objectives 2	**Community Relations 1:** To what extent are noxious weeds, invasive species, and animal damage spreading from National Forest System lands to other ownerships or from lands managed by other government agencies to National Forest System lands?	Key issue;	Acres of noxious weeds spreading to or from other ownerships; Acres of prairie dogs spreading to or from other ownerships; Instances of insect infestations spreading to or from other ownerships.	B	Geographic	Five years
Notes: When unwanted plants and animals spread from NFS lands to other lands this places an economic hardship on the landowner to control the spread which can be a key issue with affected land owners.						
Legal 36 CFR 219.12(k)5(iv); Goal 1c Objective 5	**Damage Control 1:** To what extent are destructive insect and disease outbreaks prevented following management activities? (See also Community 1)	Key issue; Great consequences	Acres & number of outbreaks. Distance to and age of nearest management activity.	A	Geographic	Five years
Notes: Destructive insect and disease outbreaks can cause a great deal of property & resource damage. Prevention promotes healthy ecosystems.						
Goal 1.c Objective 5, Goal 4.b Public & Organizational Relations Objectives 2	**Damage Control 2:** To what extent are noxious weeds, invasive species, and animal damage expanding or being reduced?	Likely to affect; Great consequences; Key issue.	Species, Location, and acres of noxious weeds, Invasive species, and animal damage.	A	Geographic	Five years

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Notes: Management activities can spread or control noxious weeds, early detection is the most economical and sure way of controlling outbreaks, noxious weed control is a key issue.						
Goal 1.c Objective 1; Goal 2.c Wildlife, Fish, & Plant Use Objective 2	**Vegetation 1:** To what extent are rangeland vegetation structure objectives being met?	Likely to affect; Great consequences.	Location & percent of rangeland area meeting, Making measurable progress towards, or Not meeting desired vegetation structure	A	Geographic	Five years
Notes: The mosaic of vegetation structure on rangelands helps determine the diversity of native plants and animals occurring in an area. Vegetation structure and its diversity is largely determined by the frequency, intensity, timing and duration of grazing by livestock, wildlife and other factors such as fire, annual weather patterns, and plant species composition. (Benkobi et al, 2000 & Benkobi, 1999)						
Goal 1.c Objective 1; Goal 2.c Wildlife, Fish, & Plant Use Objective 2	**Vegetation 2:** To what extent are rangeland vegetation composition objectives being met?	Likely to affect; Great consequences.	Location & percent of rangelands meeting, Making measurable progress towards, or Not meeting desired vegetation composition.	A	Geographic	Five years
Notes: Plant species composition on rangelands is largely determined by soils productivity, weather, fire and the frequency, intensity, timing and duration of grazing by livestock and wildlife..						
Goal 1.c Objective 1; Goal 2.c Wildlife, Fish, & Plant Use Objective 2	**Vegetation 3:** To what extent are desired vegetation conditions in forested areas being met?	Likely to affect; Great consequences.	Location & percent of forested lands meeting, Making measurable progress towards, or Not meeting desired structural stages	A	Geographic area: Pine Ridge, Oglala	Five years

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Notes: The mosaic of structural stages in forests helps determine the diversity of native plants and animals occurring in an area. Fire and timber management largely determine the mix of structural stages.						
Goal 1.c Objective 1; Goal 2.c Wildlife, Fish, & Plant Use Objective 2	**Vegetation 4:** To what extent are desired vegetation conditions in wetlands being met?	Likely to affect; Great consequences.	Location & percent of wetlands meeting, Making measurable progress towards, or Not meeting desired structural stages	A	Administrative unit wide	Five years
Notes: The amount of development of shoreline and emergent vegetation around wetlands helps determine the suitability of these areas as habitat for a variety of wildlife species. The frequency, intensity, timing and duration of livestock grazing are key factors in determining the amount of shoreline and emergent vegetation in many constructed or natural wetlands.						
Goal 2.a Objective 1, 7	**Recreation 1:** To what extent are trails managed to meet regional standards and to minimize conflicts among users..	Great consequences	Location and miles of trails meeting and not meeting regional standards. Reports of conflicts among users.	B	District	Annually
Notes: An understanding of trail conditions is needed in order to obtain funding and schedule the work needed to bring trails up to standard. A trail in poor condition causes erosion and is a safety hazard.						
Goal 2.a Objective 4 & 6	**Recreation 2:** Where does the demand for recreation opportunities warrant development of additional opportunities such as trails or campgrounds?	Great consequences	Customer survey and individual public contacts. Name of facility, location, and time existing use exceeds capacity.	B	District	Five years
Notes: An understanding of the demand for recreation opportunities is needed to efficiently use available funding to develop new recreation facilities or programs and satisfy public demand for recreation opportunities.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Legal - National Historic Preservation Act; Goal 2.a Objectives 2, 3, & 4, Goal 2b Heritage Objectives 2 & 5, Goal 2c Geologic and Paleontologic Resources Objective 3 &Wildlife, Fish & Plant Use Objective 1, Goal 4a Objective 2	**Recreation 3:** To what extent are Grassland and Forest visitors informed of the recreation opportunities available to them; are they adequately guided to those recreation opportunities; and do they receive adequate interpretive information on National Register of Historic Places and other heritage sites, geologic, paleontologic, wildlife, plant, and recreation resources or opportunities?	Key issue	Customer survey and individual contacts with grassland and forest visitors and adjacent landowners.	B	District	Five years
Notes: People like to have directional signs to guide them to their destination. Private landowners appreciate it when visitors do not trespass on their land. Interpretive information further enhances the National Grassland or Forest experience.						
36 CFR 219.21 (g) 36 CFR 295.2 &.5 Goal 2.a & 4.a	**Travel and Access 1:** What are the effects of vehicle use off roads?	Key issue	Number and location of off-road vehicle caused incidents of erosion and new unauthorized roads. Acres of ineffective wildlife habitat due to off-road vehicle use.	B	District	Two years
Notes: NFMA requirement to assess the potential effects of vehicle use off roads prior to classifying areas and trails for off-road vehicle use. Monitoring will provide information for the travel management plan to be prepared within five years after record of decision is signed.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Legal - National Historic Preservation Act; Goal 2.b Heritage Objectives 2 & 5	**Heritage 1:** To what extent are National Register sites and districts being protected and preserved?	Great consequences	Condition of each site, incidents of vandalism.	B	Site or District	Five years
Notes: An understanding of site or district conditions is needed in order to obtain funding and schedule the work needed to bring these sites up to standard. Restoration is less expensive if acted upon as early as possible.						
Goal 2.b Heritage Objective 3	**Heritage 2:** To what extent are traditional cultural properties being protected?	Likely to affect	Condition of each site, incidents of vandalism or disruption of the use of traditional cultural properties.	B	Geographic	Five years
Notes: Management activities may affect the usefulness of traditional cultural properties						
Goal 2.b	**Special Interest Areas:** To what extent have the special features found Special Interest Areas been conserved or enhanced?	Great consequences	Condition of features / communities	B	Area specific	Five years
Notes: An understanding of the condition and trend of the features or communities that lead to protecting 2.1a thru 2.1m in Chapter 3, pages 3-13 thru 3-16 is needed so management action can be taken to preserve or enhance Special Interest Areas.						
Goal 2.b	**Research Natural Areas:** To what extent have the unique research features of Research Natural Areas been conserved or enhanced?	Great consequences	Condition of features / communities	B	Area specific	Five years

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Notes: An understanding of the condition and trend of the features or communities that lead to protecting the Tree Farm and Signal Hill Research Natural Areas needed so management action can be taken to preserve or enhance Research Natural Areas.						
Goal 2.b	**Wilderness:** To what extent are the Soldier Creek Wilderness special features and communities of special concern conserved or enhanced?	Great consequences	Condition of features / communities	B	Area specific	Five years
Notes: An understanding of the condition and trend of Soldier Creek Wilderness features is needed so management action can be taken to preserve the wilderness features.						
Goal 2.b	**Recommended for Wilderness:** To what extent are the Red Shirt and Indian Creek Recommended for Wilderness special features and communities of special concern conserved or enhanced?	Great consequences	Condition of features / communities	B	Area specific	Five years
Notes: An understanding of the condition and trend of the features or communities that lead to recommending the Red Shirt and Indian Creek areas as wilderness is needed so management action can be taken to preserve the wilderness features.						
Legal 36 CFR 219.7(f); Goal 2.c	**Community Relations 2:** What are the effects of National Forest System Management on adjacent communities?	Key issue; Easily/cost effectively answered	NFS related jobs and income; Community tourism receipts; Federal receipts, Federal revenue sharing with state and local governments.	B	County and community depending on data availability.	Annually
Notes: How NFS management affects local economies is an important public issue. With cooperation from State & Local governments the information can be obtained at a relatively low cost.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Goal 2.c Miscellaneous Products Objective 1	**Miscellaneous Products 1:** To what extent is the demand for miscellaneous products being met?	Key issue	Number & kind of miscellaneous permit applications or requests denied	B	District	Five years
Notes: Miscellaneous products are a key issue for the people who use them.						
Goal 2.c Scenery Objective 1	**Scenery 1:** To what extent have scenery management objectives been met?	Likely to affect	Acres and location of desired versus actual scenery integrity condition.	B	Geographic	Five years
Notes: Management activities can alter the scenic integrity of an area either positively or negatively. For many visitors the condition of the grassland or forest scenery is key to enjoying their experience.						

Implementation Monitoring

Endangered Species Act; Goal 4b Public and Organizational Relations Objective 2	**T&E:** Are actions identified in national recovery plans for threatened and endangered species being implemented where opportunities exist on national grasslands and forests?	Key issue (recovery and viability); Great consequences	Type of actions identified in recovery plans that FS is implementing and type of recovery plan actions that could be implemented on national grasslands and forests.	A	T&E recovery areas identified in recovery plans.	Annually
Notes: Recovery plans have been prepared for each of the threatened and endangered species occurring on the national grasslands and forests. The national recovery plans for the black-footed ferret, western prairie fringed orchid, and blowout penstemon have specific action items that could be applied to the national grasslands and forests in the planning area. These lands can play a significant role in the recovery of these species.						

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Agency Expectations; Public Expectations & Issues. Goal 3 Objectives 1, 2, & 3	**Administration:** Are the action plans identified in the objectives being completed on schedule?	Likely to affect.	Percent compliance; narrative	B	Administrative unit wide	Annually
Notes: These are the administrative activities such as conduct studies, obtain baseline inventories, complete action plans, or coordinate with outside groups. The administrative activities are necessary to set the stage for successful Land & Resource Management Plan implementation, and failure to conduct administrative activities would likely affect the ability to meet the goals, objectives, and desired future conditions established in the plan.						
Legal: 36 CFR 219.12 (k)	**Implementation Monitoring:** Have site-specific decisions implement the Land & Resource Management Plan direction?	Likely to affect.	Percent compliance; narrative; As a minimum review all timber sales; 2 AMPs per District; and 1% of other NEPA projects completed for compliance with Land & Resource Management Plan direction.	B	Administrative unit wide	Annually
Notes: The standards and guidelines provide mitigation to help meet the goals and objectives of the Land & Resource Management Plan. Failure to implement the standard and guidelines would likely affect the ability to meet the goals and objectives established in the Plan.						
Legal: 36 CFR 219.12 (k)1 & 3	**Outputs:** Are the projected annual outputs and services being met annually and at anticipated costs?	Key issue; Easily/cost effectively answered	See annual MAR report	B	Administrative unit wide	Annually

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Notes: Many National Grassland & Forest Users are very interested in projected outputs and services and this is a key issue for them. MAR reporting is required of all National Forest & Grasslands.						

Validation Monitoring

Endangered Species Act; USDA Departmental Regulation 9500-4; 36 CFR 219.19 and 219.20Key Issue; Legal: 36 CFR 219.19(a)(6); 36 CFR 219.20; 36 CFR 219.27(5 and 6); Goal 1.b Objectives 2, 4, & 6	**Suggested Stocking Rates:** Are the suggested stocking rate guidelines (Appendix I) providing the desired levels of vegetation structure and habitat for management indicator species and species at risk?	Great consequences	Height and density of grassland and sagebrush understory vegetation after livestock grazing	A	Administrative unit-wide	Five years
Notes: As described in Appendix I, stocking rate guidelines for livestock grazing are used to help achieve desired vegetation objectives. These guidelines need to be validated in terms of their ability to provide the desired levels of vegetation structure and quality habitat for management indicator species and species at risk.						
36 CFR 219.19 and 219.20	**Wildlife:** How do residual cover levels measured in the fall relate to nesting cover levels the following spring?	Great consequences	Height and density of grassland and sagebrush understory vegetation in the fall and following spring	A	Administrative unit-wide	Five years

Monitoring Driver	*Monitoring Question*	*Monitoring Priority*	*Potential Monitoring Items*	*Precision & Reliability*	*Scale*	*Frequency of Reporting*
Notes: Visual obstruction readings (VOR) and stubble heights of residual cover are commonly made in the fall after livestock grazing, and this information is then used to predict the nesting cover suitability in the same area the following spring for prairie grouse and other ground-nesting birds. This monitoring is needed to assess the accuracy of these predictions.						
Endangered Species Act; Migratory Bird Treaty Act; 36 CFR 219.19; Goal 1.b. Objectives 2 & 4	**Wildlife:** Are oil and gas stipulations effective, inadequate, or excessive in protecting and conserving raptors, prairie grouse, mountain plover, black-footed ferrets, bighorn sheep, and other wildlife species and their habitats?	Key issue (viability and biological diversity); Legal issue; Great consequences	Documentation of locations where the stipulations were or appeared to be inadequate	B	Administrative unit-wide	Five years
Notes: Development, management activities and recreational activities can have significant impacts on fish and wildlife. Negative impacts are avoided or lessened through the use of stipulations.						
Legal 36 CFR 219.11 (d); Goal 1.b	**MIS:** Are the selected management indicator species and their response to management activities in habitats on local National Forest System lands adequately representing the management effects on other species in the associated response guilds and is the species membership identified for each response guild reasonably accurate and complete?	Key issue (viability); Legal issue; Great consequences	MIS population and reproduction statistics; Habitat use and availability statistics for MIS and associated species.	A	Administrative unit-wide	Five years