Thunder Basin National Grassland

2008 Monitoring and Evaluation Report

October 1, 2007 through September 30, 2008

United States Forest Service
Rocky Mountain Region

June, 2009

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Cover Photo: Kellog Reservoir on TBNG.

Forest Certification

The Thunder Basin National Grassland Land and Resource Management Plan (Grassland Plan) was approved on July 31, 2002. The Grassland Plan is a dynamic document, subject to change based on annual monitoring and evaluation. Monitoring is intended to provide the information necessary to determine whether the Grassland Plan is sufficient to guide management of the Thunder Basin National Grassland for the subsequent year or whether modification of the plan or modifications of management actions are necessary.

Overall, the 2008 Monitoring and Evaluation results indicate that the management of the Thunder Basin National Grassland is meeting the goals, objectives, standards and guidelines, and management area prescriptions in the Grassland Plan. I have reviewed the 2008 Annual Monitoring and Evaluation Report that was prepared by the Forest Interdisciplinary Team (IDT). It contains the monitoring data and results from the past fiscal year. A technical team of experts is assisting the IDT in developing monitoring protocols that will be implemented in future years.

The Forest IDT has identified several emphasis areas for continued monitoring, including sage grouse and prairie dog colonies. During the process of developing the prairie dog strategy (in draft), a potential management area adjustment was identified for the Black-Footed Ferret Reintroduction Habitat Management Area (3.63). The Douglas Ranger District will continue to work on this issue to determine what type of changes to the Grassland Plan are necessary to fully implement this strategy when it is finalized. The Grassland Plan is sufficient to continue to guide management of the National Grassland.

Please contact Frank Romero at the Medicine Bow-Routt National Forests and Thunder Basin National Grassland, 2468 Jackson Street, Laramie, Wyoming, 82070, or call 307-745-2300, if you have any specific concerns, questions, or comments about this report.

/s/ Mary H. Peterson — June 5, 2009

MARY H. PETERSON — Date
Forest Supervisor

Introduction

The Thunder Basin National Grassland (TBNG) is located in northeastern Wyoming in the Cheyenne and Powder River Basins between the Big Horn Mountains and the Black Hills. This semi-arid grassland ranges in elevation from 3,600 feet to 5,200 feet and is home to over 800 species of native plants. Land patterns are very complex because of the intermingled federal, state and private lands. The Grassland abounds with wildlife year-round, provides forage for livestock and is underlain with vast mineral resources. There are opportunities for recreation including hiking, sightseeing, hunting and fishing.

The Thunder Basin National Grassland Plan was revised as part of the Northern Great Plains Management Plans Revision process. The revision issued a combined Environmental Impact Statement (EIS) for the revision of eight national grasslands and two national forests in the northern Great Plains. Separate Records of Decision (ROD) were then signed for each unit, with the TBNG ROD being issued in July, 2002. The documents associated with the plan revision and ROD can be viewed at:

http://www.fs.fed.us/ngp/docs.html

This Monitoring Report is organized according to the *USDA Forest Service Government Performance and Results Act Strategic Plan: 2000 Revision* goals where practicable. These goals are: Ecosystem Health, Multiple Benefits to People, Scientific and Technical Assistance, and Effective Public Service.

The National Forest Management Act (NFMA) requires specific legally required monitoring items for forest and grassland plan implementation as well as additional monitoring that will be conducted based on the availability of funding and personnel.

The annual monitoring items are included in this report. All monitoring items were addressed in the TBNG Five Year Review, which was completed during FY08. This report is available on the web at:

http://www.fs.fed.us/r2/mbr/projects/forestmonitoring/index.shtml

As recommended in the TBNG 5 Year Review, the Bald Eagle and Mountain Plover monitoring items are not included as Threatened and Endangered (T&E) monitoring items since neither of these species currently has threatened or endangered status. Information concerning these species will be included under the appropriate Viability monitoring items in the next 5 year review, scheduled for 2012.

Scientific Technical Review Committee

As outlined in the Record of Decision, dated July 31, 2002, the Regional Forester realized that there are still concerns by some that the projected effects in the EIS may underestimate what the real effects will be and that there is uncertainty about the effects of implementing the revised standards and guidelines. In an attempt to address this concern, the Regional Forester directed the Forest Supervisor to establish a scientific technical review committee composed of representatives from Wyoming Game and Fish Commission, University of Wyoming, Office of the Governor, USDA Forest Service, and Wyoming Department of Agriculture and Oil and Gas Conservation Commission.

The purpose of the committee was to develop a monitoring implementation plan that will describe the methods of monitoring needed to determine how well we are implementing the direction in the Grassland Plan, to determine how effective implementation of Grassland Plan direction is in meeting desired conditions, and to help us validate assumptions and direction used in the Grassland Plan.

Scientific Technical Review Committee

Participating Agencies

- University of Wyoming:
  - College of Agriculture
    - Dept. of Agriculture and Applied Economics
    - Dept. of Renewable Resources
    - Wyoming Natural Diversity Database
- Office of Governor:
  - Planning and Policy
  - Endangered Species Coordinator
- State of Wyoming:
  - Wyoming Dept. of Agriculture
  - Wyoming Game and Fish Department
  - Department of Environmental Quality
    - Water Quality Division
    - Air Quality Division
  - Oil and Gas Conservation Commission
- USDA Forest Service
  - Medicine Bow – Routt NFs and TBNG
  - US Forest Service Research

On May 21, 2004, individuals from the participating agencies met at the Medicine Bow – Routt National Forests and Thunder Basin National Grassland Supervisor's Office in Laramie, WY (see box).

The intent of this meeting was to establish the need, purpose and interest of agency representatives to serve on the committee, and to discuss the expectations of what the product outcome would be.

An example of a Monitoring and Implementation Guide was presented that displayed the monitoring questions, measures and protocols. The group also reviewed Chapter 4 of the Grassland Plan - Monitoring and Evaluation.

From this chapter, the group decided to use a format for their Monitoring and Implementation Guide that displays the Monitoring Question, Monitoring Items, Protocols, Frequency of Measurement, Cost and Responsibility.

On August 5, 2004, a Memorandum of Understanding (MOU) was signed between the Medicine Bow – Routt National Forests and Thunder Basin National Grassland and the State of Wyoming to formalize the Scientific Technical Review Committee.

During calendar year 2005 the Scientific Technical Review Committee developed the Monitoring and Implementation Guide with final review concluding in calendar year 2006. During the fall of 2006 guidance on format for Monitoring and Implementation Guides to standardize this process at the National level was released. Work is continuing on the Thunder Basin National Grassland Monitoring Guide.

The Scientific Technical Review Committee will work with the Grassland Plan Monitoring and Evaluation Interdisciplinary Team to finalize the monitoring methods to

provide an adaptive management approach to make changes and/or evaluate the effectiveness of changes made to the 2002 Revised Plan.

Goals and Objectives

Chapter 1 of the Grassland Plan lists goals and objectives to be accomplished through grassland management. Goals and objectives provide broad, overall direction regarding the type and amount of goods and services the national grasslands and national forests provide and focus on achieving ecosystem health and ecological integrity.

Goals are concise statements that describe desired conditions, and expected to be achieved sometime in the future. They are generally timeless and difficult to measure. Goals describe the ends to be achieved, rather than the means of doing so.

Objectives are concise, time-specific statements of measurable planned steps taken to accomplish a goal. They are generally achieved by implementing a project or activity.

Many of the objectives are due to be accomplished over the life of the plan, usually considered to be 15 years. However, some objectives have earlier due dates, or are annual objectives. For the objectives due by 2008 or earlier, in addition to the annual objectives, the progress made towards these objectives is listed in Appendix 1.

The goals and objectives in the Grassland Plan are tiered to the *USDA Forest Service Government Performance and Results Act Strategic Plan: 2000 Revision*. This strategic plan presents the goals, objectives and activities that reflect the Forest Service's commitment to a sustainable natural resource base for the American people. All goals and objectives fall under the overall mission of the Forest Service, which is to sustain the health, productivity, and diversity of the land to meet the needs of present and future generations. "Caring for the Land and Serving People" expresses the spirit of this mission. Implicit in this statement is the agency's collaboration with people as partners in caring for the nation's forests and rangelands.

The Forest Service's mission and strategic goals and objectives are derived from the laws defining and regulating the agency's activities. Goals and objectives describe tangible progress toward achieving the agency's mission through implementing land and resource management plans. These plans guide on-the-ground natural resource management to ensure sustainable ecosystems and to provide multiple benefits. The Forest Service is committed to these goals and objectives.

Projects Completed During FY08

Table 1 gives the decisions made for projects on the TBNG during FY08. These decisions included Record of Decisions (ROD) from an Environmental Impact Statement (EIS), Decision Notices (DN) from an Environmental Analysis and Decision Memos (DM) from categorically excluded projects.

The list of projects was generated from the database that produces the Schedule of Proposed Actions (SOPA). This quarterly report is available at the following website:

http://www.fs.fed.us/sopa/forest-level.php?110206

Table 1. Projects Completed in FY08

Name	Decision Type	Date Signed	Primary Purpose
Thunder Basin Analysis Area Vegetation Management	ROD	10/5/07	Range
Inyan Kara Analysis Vegetation Management Phase II	ROD	9/12/08	Range
Cow Creek Buttes Land Exchange	DM	6/3/08	Land Ownership Management
Powder River Energy Corp. 450 to School Creek Mine 14.4/24/9 KV	DN	6/23/08	Utility Line / Special Use Authorization
RT Communications Inc – Upton Exchange Fiber Optic Telephone Line	DM	9/4/08	Utility Line / Special Use Authorization
Weston Shooting Restriction	DM	2/22/08	Recreation

Conclusions and Recommendations

Based on the information gained through the annual monitoring efforts, described in this report, the Interdisciplinary Team (IDT) recommends the following actions.

Conclusions

The FY08 monitoring results were consistent with the 5 Year Evaluation Report completed last year. Management should continue to work towards completing the recommendations from that report.

Recommendations

Continue to implement the recommendations from the FY07 and Five Year review, as outlined below.

Progress made toward FY07 and TBNG Five Year Review Recommendations:

Cheatgrass

Annual bromes, especially cheatgrass, have expanded their populations substantially during the ongoing 8-year severe drought. Our predictive model indicates the entire 553,000 acres of Grassland are potentially capable of being infested. Cheatgrass has a high potential for adversely modifying wildlife habitat. It has specifically been identified in both the Statewide and local working group Sage Grouse Conservation Plans for its potential to replace native, desirable vegetation. It also can noticeably increase fire danger. In many cases, uncontrolled fire can adversely modify many wildlife habitats and reduce or eliminate its effectiveness.

Recommendation

Complete needed environmental analysis as soon as practicable to implement aerial application of approved herbicides for the control of invasive annual bromes.

Progress: ***This is going to be a Forest/Grassland-wide Environmental Analysis. Discussions will be conducted with outside Federal, State and local agencies to determine the cost/benefit ratio and determine if and when to proceed with such an analysis.***

Greater Sage-grouse

Overall, within the Hilight Bill Geographic Area, based on population data and impacts to the quality and quantity of habitat, it appears that population is declining. With continuing coal mine expansion and energy development, three of the Hilight Bill Geographic Area Objectives are likely not attainable.

Recommendation

Revise the Hilight Bill geographic area objectives as follows:

Greater Sage-grouse (MIS[1]) Objective 1

Current LRMP direction: *Provide diverse and quality sagebrush habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of Greater Sage-grouse and other wildlife with similar habitat needs.*

Recommended modifications: *Provide diverse and quality habitat where existing and possible, and encourage mine reclamation to reestablish this habitat type in order to provide habitat for the reestablishment of Greater Sage-grouse after mining operations are completed.*

Greater Sage-grouse (MIS) Objective 2

Current Grassland Plan direction: *As a part of reclamation efforts establish and maintain quality nesting habitat for Greater Sage-grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush under-stories in areas identified as historical sage brush habitat.*

Recommended modifications: *Outside of active mineral development areas, establish and maintain quality nesting habitat for Greater Sage-grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush under-stories within 10 years*

Greater Sage-grouse (MIS) Objective 3

Current Grassland Plan direction: *Reduce the impacts of extended droughts on Greater Sage-grouse populations and their recovery after droughts by managing land uses in Greater Sage-grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats.*

Recommended modifications: *Within occupied habitat, reduce the impacts of extended droughts on Greater Sage-grouse populations and their recovery after droughts by managing land uses in Greater Sage-grouse habitat in a manner that does not*

[1] Management Indicator Species

significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats.

Progress: ***Discussions are in process on how and when to complete a Grassland Plan amendment to make the necessary changes.***

Soils Objective

Goal 1a, Objective 1b: ***Achieve a 20 percent reduction in acres of eroded or disturbed soils by Forest Service permitted or management actions.***

This objective appears unattainable in light of the increasing permitted actions on the Grassland, primarily due to minerals development.

Recommendation:

Work with forest and regional soils staff to revise this objective to incorporate the original intent of reducing soil disturbance while acknowledging that it is likely that disturbance area will increase from increasing permitted actions.

Progress: ***Discussions are in process on how and when to complete a Grassland Plan amendment to make the necessary changes.***

Upton Osage MIS Species:

During 5 years of survey, no Greater Sage-grouse leks and one Plains Sharp-tailed Grouse lek have been observed. With the apparent limited populations in this Geographic Area (GA), these grouse do not appear to be suitable MIS species for this GA.

Recommendation:

Evaluate whether different MIS species should be chosen for the Upton Osage Geographic Area.

Progress: ***Discussions are in process on how to proceed with this recommendation.***

Proposed Revisions of monitoring Items in Chapter 4 of the Grassland Plan:

Incorporate Bald Eagle under Viability 2 Monitoring Item since the Bald Eagle has been delisted and is no longer considered a T & E species and remove the **T & E 2** (Bald Eagle) monitoring item.

Incorporate mountain plovers into the Viability 4 Monitoring Item (prairie dog colony habitat), which includes reporting on sensitive species (reported every 5 years), and remove **T & E 3** Monitoring Item since mountain plovers are no longer being considered for Endangered Species Act listing.

Revise the **Watershed 1 Monitoring Item** to better indicate that the monitoring item is evaluating watershed conditions. The revised monitoring item would read:

To what extent has ~~water quality~~ watershed condition on watersheds containing National Forest System Lands been restored, maintained or improved?

Revise the **Watershed 2 Monitoring item** to better evaluate changes in water quality. Revised wording would be modified as follows:

Existing wording:
To what extent have water bodies on National Forest System lands that have been degraded by Forest Service permitted or management actions been restored?

Proposed wording:
To what extent has water quality been restored, maintained or improved?[2]

Revise the **Wildlife Monitoring Item** (Oil and Gas Stipulations) to delete bighorn sheep as they are not present on the TBNG. The change in wording would be:
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?

Consider revising the **Damage Control 1 Monitoring Item** (Insect and Disease) to better reflect the current management of forested areas on the Thunder Basin National Grassland.

Progress: ***The proposed modifications are tentatively scheduled to be completed by Grassland Plan amendment in 2010.***

Grassland Plan Appeals

Sixteen appeals were filed by a variety of groups and individuals who disagreed with the decisions made as a result of the Northern Great Plains Management Plan Revision Process. The Thunder Basin National Grassland Land and Resource Management Plan Revision was upheld in a decision by the Chief of the Forest Service on February 6, 2004. This appeal decision can be viewed at:

http://www.fs.fed.us/ngp/plan/appeals/appeals.html

Administrative Changes to the Forest Plan

Two amendments to the Grassland Plan have been completed to date, a third amendment is in progress.

Amendment 1: Dakota, Minnesota, and Eastern Railroad Corporation (DM&E)

This amendment was signed on September 4, 2003 by the Regional Forester and authorizes rail line construction, operation and maintenance on the Thunder Basin National Grassland, Wyoming. The amendment is in response to a proposal from the DM&E railroad to expand rail operations into the Powder River Basin. The USFS

[2] This proposed wording is a slight modification of the wording proposed in the FY07 TBNG monitoring report, and is worded to be consistent with the Medicine Bow Forest Plan water quality monitoring item.

participated as a Cooperating Agency with the Surface Transportation Board in the analysis and preparation of the final Environmental Impact Statement (EIS) for the DM&E proposal.

The EIS concluded that there was a need for the DM&E to construct and operate a rail line across portions of the TBNG. It also concluded that approval of the project on National Forest System (NFS) lands would be inconsistent, in some instances, with the standards and guidelines in the Grassland Plan.

This amendment modified specific standards and guidelines for the railroad corridor and adjacent areas. The amendment can be found on the Forest website:

http://www.fs.fed.us/r2/mbr/projects/specper/adobepdf/appxEdoc.pdf

Amendment 2: Teckla to Antelope Coal Mine 69kV Power Line

This amendment was signed on June 26, 2006 by the Forest Supervisor and authorizes power line construction, operation and maintenance on the Thunder Basin National Grassland, Wyoming. The amendment is in response to a proposal from the Powder River Energy Corporation (PRECorp) to provide electrical service from the Teckla Substation to Antelope Coal Mine. The USFS prepared an Environmental Assessment (EA) to analyze the impacts of this proposal.

The EA concluded that there was a need for PRECorp to construct and operate a power line across portions of the Thunder Basin National Grassland. It also concluded that approval of the project on NFS lands would be inconsistent, in some instances, with the standards and guidelines in the Grassland Plan.

This amendment modified specific standards and guidelines for the power line corridor and adjacent areas.

Proposed Amendment 3: Thunder Basin National Grassland Prairie Dog Management Strategy

This amendment (currently in progress) is proposing a full suite of tools to manage prairie dogs, modify MA 3.63 boundaries (black-footed ferret reintroduction habitat) and adjust the shooting restriction boundary on the Thunder Basin National Grassland.

More information concerning this proposed amendment, including the draft EIS can be found on the following website:

http://www.fs.fed.us/r2/mbr/projects/forestplans/in_progress/index.shtml

New Laws, Regulations and Policies

Planning Regulation Update

The 2008 planning rule was published in the Federal Register in April 2008 and now governs forest planning for the Forest Service. The regulations can be found at the following website:

http://fsweb.r2.fs.fed.us/strategic_planning/forest_planning/policies/2008_planning_rule.pdf

Travel management

The Travel Management Rule announced in 2005 requires each National Forest and Grassland to identify and designate those roads, trails, and areas that are open to motor vehicle use. Forests and Grasslands in the Rocky Mountain Region are seeking public input and coordinating with federal, state, county, and other local governmental entities as well as tribal governments to implement the rule.

Travel management planning is one of the objectives listed in Chapter 1 of the Grassland plan. Goal 4a, Objective 1 states:

> *Within 5 years, identify travel opportunities and restrictions, including designating motorized travel-ways and areas, to meet land management objectives. Provide reasonable access for use of the national grasslands and national forests*

Travel management planning on the Thunder Basin National Grassland is scheduled to be completed in 2009 with the environmental analysis currently in progress. The Douglas District is seeking public input and coordinating with federal, state, county and other local governmental entities as well as tribal governments before any decision is made on a particular road, trail or area. Unplanned, user-created routes will be considered at the local level during the designation process. Travel management will designate routes (with maps and signs on the ground) and travel will then be restricted to "designated routes." The Motor Vehicle Use Map is scheduled to be completed by October 2009.

More information included a link to the new regulation can be found at the following website:

http://www.fs.fed.us/r2/mbr/recreation/travel_management/

Roadless Area Conservation

In 2001, the Forest Service enacted the Roadless Rule, which essentially prohibited road construction and reconstruction and timber harvesting, subject to certain limited exceptions, in inventoried roadless areas on a uniform nationwide basis.

In July 2003 the Wyoming District Court issued a nationwide permanent injunction against the Roadless Rule.

On May 5, 2005, the Forest Service adopted the State Petitions Rule, which is a process to provide Governors an opportunity to establish or adjust management requirements for National Forest System inventoried roadless areas within their States.

In September, 2006, a U.S. District Court in California reinstated the 2001 Rule and set aside the State Petitions Rule. In August 2008, the U.S. District Court for the District of Wyoming issued a permanent injunction and set aside the 2001 Rule. In December 2008 the U.S. District Court in California stayed its injunction outside of the 9th Circuit and New Mexico in the interests of judicial respect to other jurisdictions, pending further action by the Wyoming court or the Tenth Circuit.

There are six roadless areas on the Thunder Basin National Grassland. No roads have been constructed with in these roadless areas since the Thunder Basin Grassland Plan Record of Decision (ROD) was signed in 2002.

Information regarding roadless can be found at the following website:

http://www.roadless.fs.fed.us/

Monitoring items

The annual monitoring items are discussed below. As mentioned previously, all monitoring items were addressed in the TBNG Five Year Review, which was completed during FY08. This report is available on the web at:

http://www.fs.fed.us/r2/mbr/projects/forestmonitoring/index.shtml

As recommended in the TBNG 5 Year Review, the Bald Eagle and Mountain Plover monitoring items are not included as T&E monitoring items since neither of these species has threatened or endangered status. Information concerning these species will be included under the appropriate Viability monitoring items in the next 5 year review, scheduled for 2012.

Ensure Sustainable Ecosystems

Watershed 4 - Aquifer Protection

Goal 1.a, Objective 5
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***To what extent have aquifers been protected from contamination from abandoned wells?***

Monitoring protocol/data collected: Compliance monitoring is conducted to determine if wells currently being abandoned are plugged properly. Monitoring to determine if past abandoned wells have been plugged occurs infrequently.

Results/Evaluation: Groundwater aquifers on the Grassland provide water for domestic and livestock uses. Abandoned wells, if not properly sealed, can provide a direct conduit for surface water to carry pollutants to groundwater. Groundwater contamination could limit or increase the costs of water use for domestic or livestock purposes.

Oil and Gas Wells: There are an estimated 850 abandoned and plugged oil and gas wells on the Grassland. Oil and gas wells abandoned in 2008 are shown in Table 2. Monitoring conducted by the Bureau of Land Management (BLM) and Douglas Ranger District Minerals Staff indicate that all wells were properly plugged in 2008.

BLM and Wyoming Oil and Gas Conservation Commission regulate plugging of oil and gas wells in part to prevent pollution of freshwater supplies. BLM policy requires a qualified BLM employee to witness the entire cementing portion of the plugging process. Since standard procedures are in place to ensure oil wells are plugged before they are abandoned, it is assumed that most of the oil and gas wells abandoned since the Grassland Plan was established have been properly plugged.

Table 2 . Abandoned Oil and Gas Wells - Plugged in 2008.

Well Name	Date Plugged	Qtr-Qtr	Section	T	R
Porcupine #30-8	2/8/2008	SENE	30	42N	70W
Maze Payne Fed #32-35	6/19/2008	SWNE	35	42N	70W

There are 10 known abandoned open-well conventional oil wells on the Grassland (Table 3) that are all associated with private mineral estates. The Forest Service has jurisdiction over surface cleanup at these sites and would need to work cooperatively with the State of Wyoming Oil and Gas Conservation Commission to ensure these wells are properly plugged. The Grassland is currently working on a plan to properly plug these wells.

Table 3. Abandoned Oil and Gas Wells – Open as of 2008.

Well Name	Depth (ft)	Qtr-Qtr	Section	T	R
Bariod Fee PP7	350	SWSW	30	47N	63W
Bariod Fee PP2	362	SWSW	30	47N	63W
PP3	300	SESW	30	47N	63W
PP4	300	SESW	30	47N	63W
National Lead Patent 9	253	SESW	30	47N	63W
Bariod Fee PP1	360	SESW	30	47N	63W
PP15	462	SESE	30	47N	63W
National Lead 3	263	SESE	30	47N	63W
PP20	350	NWNW	30	47N	63W
Mortons Inc. 1	5920	SENW	15	39N	69W

Water Wells: The number of abandoned domestic and livestock water wells has not been summarized, but efforts are underway to update this information. Wyoming State Engineer's Office (WYSEO) regulations require the plugging of abandoned stock and municipal wells, but it is unknown to what extent these regulations have been followed on the Grassland.

Table 4. Abandoned Domestic and Livestock wells – Open as of 2008.

Well Name	Domestic or Livestock	Qtr-Qtr	Section	T	R
Sauerkraut/East 231W80	Livestock	SWSW	3	40N	68W
Old Homestead #1	Both	NESW	13	39N	71W
Old Homestead #2	Both	NWSE	7	39N	70W
Old Homestead #3	Livestock	NESW	6	40N	70W
Old Homestead #4	Both	SWSW	6	40N	70W

A field inventory of abandoned stock and water wells, which have not been plugged according to WYSEO regulations or the abandonment methods are unknown, was initiated in 2008 (Table 4). There are four abandoned wells associated with homesteads from 1910-1930, that were presumably used for domestic and/or livestock uses. One of these wells is capped on the ground surface, but the others are not capped. Whether any means were used to close/abandon these wells below the ground surface is not known. These wells are all presumed to be shallow (<100 ft). Use of one livestock well (Sauerkraut/East 231W80), which is ~300 feet deep, was discontinued in 2005; procedures to plug/abandon this well following WYSEO approved procedures are planned to be completed in 2010.

Figure 1. Abandoned homestead well on TBNG.

Grassland Plan Goal 1.a, Objective 5 states, *"Throughout the life of the Plan, ensure proper plugging of abandoned wells to prevent cross contamination of aquifers (e.g., seismograph holes, water wells, etc.)."* Procedures are in place to ensure proper plugging of any newly abandoned oil and gas wells and monitoring has shown that these procedures are being implemented. Ten abandoned open-well conventional oil wells are known to exist on the Grassland; procedures to properly plug these wells have not yet been initiated. Five abandoned stock and water wells, which have not been properly plugged or with unknown abandonment procedures, are known to exist on the Grassland; procedures to properly plug these wells have not yet been initiated. The Wyoming DEQ has a well monitoring program, to date there are no known incidents of aquifer cross contamination on the Grassland.

Recommendations: Continue efforts to monitor oil and gas wells currently being closed to ensure they are properly plugged to prevent contamination of freshwater supplies. A comprehensive effort to determine if historic abandoned wells have been properly plugged could be expanded when funding allows. Efforts should continue to obtain information related to abandoned stock and domestic water wells on the Grassland.

Specific Recommendations: As time and funding allow, consider:

1. Continue to inventory the number, location and status of abandoned open-well oil and gas wells.
2. Work cooperatively with the State of Wyoming Oil and Gas Conservation Commission to ensure proper plugging of the open-well oil and gas wells with private mineral estate.
3. Continue to inventory the number, location and status of abandoned open-well domestic and livestock wells.
4. Work with Thunder Basin Grazing Assocation to completely plug and abandon the original Sauerkraut/East 231W80 well.
5. Assess risk of abandoned domestic and stock wells on the Grassland which have not been properly plugged and initiate a well plugging program, initially focusing on high risk wells.

MIS 3 – Population Trends

Legal: 36 CFR 219.19, 20, 27
Goal 1.b, Objective 2, 4, & 6
Frequency of Measurement: Annual
Reporting Period: 5 years

This monitoring item asks the question:

> ***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 NFS lands?***

Each geographic area has one or more designated MIS species. The following table gives the MIS for each geographic area.

Table 5 . MIS species by Geographic Area.

Geographic Area	Management Indicator Species
Broken Hills	Black-tailed Prairie Dog, Greater Sage-grouse
Cellars Rosecrans	Black-tailed Prairie Dog, Greater Sage-grouse
Fairview Clareton	Greater Sage-grouse
Hilight Bill	Greater Sage-grouse
Spring Creek	Greater Sage-grouse, Plains Sharp-tailed Grouse
Upton Osage	Greater Sage-grouse, Plains Sharp-tailed Grouse

Black-tailed Prairie Dog:

Monitoring Protocol/Data Collected: Acres of active prairie dog colonies on the TBNG are mapped and compared to previous years.

Results/Evaluation: Over the past eight years prairie dog populations on the TBNG have been affected by sylvatic plague. In 2001 there were 21,456 acres of active black-tailed prairie dog colonies and this dropped to 4324 acres in 2002 (80% decrease). Surveys of active acres of prairie dog colonies have occurred every year since plague was detected in 2001.

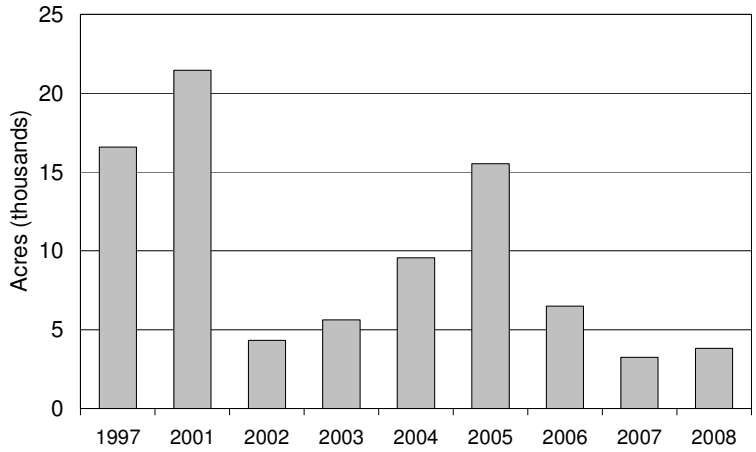

Figure 2. Active Black-tailed Prairie Dog Colonies on TBNG 1997-2008.

After the initial decline in population in 2002, the active acres of prairie dogs increased until 2005 when 15,531 acres were mapped. Since then the active acres of prairie dogs has decreased to 3,816 acres mapped in 2008. Prairie dog declines in these Geographic Areas are attributed to sylvatic plague and not current management activities. Research in other areas shows that plague causes population fluctuations and that once it moves from an epizootic (a regional epidemic) to enzootic (disease constantly present but which affects only a small number of animals), the population will stabilize. Currently there is a shooting closure protecting prairie dogs for a large portion of the Thunder Basin National Grassland, and it minimizes the impacts from plague by having one less threat to the population.

Recommendations: Continue to map prairie dog colonies across the TBNG and monitor progress towards providing for black-footed ferret reintroductions (discussed under the T&E 1 – Black Footed Ferret monitoring item on page 20).

Greater Sage-grouse Populations

Monitoring Protocol/Data Collected: Douglas Ranger District wildlife staff monitors greater sage-grouse leks in March and April. Count leks (monitored to determine population) were checked three times with 7-10 days between visits as per Wyoming Game and Fish Department (WGFD) protocol. Survey leks were visited to determine activity and to identify new leks. Leks were surveyed by Douglas Ranger District staff, WGFD biologists and game wardens, private wildlife contractors or volunteers. This information was then provided to the WGFD for compilation. Once the compiled information was available to the district a minimum population estimate and mean sage-grouse males per lek values were generated.

Population trend estimates for greater sage-grouse are based upon using the average number of males attending leks per year as an index to calculate the minimum population estimate. This estimate is generated using mean males/complex then multiplying by three to account for a 2 females: 1 male sex ratio. Then multiply that over the total number of complexes over a specific time period. Although this is a rough estimate it is valuable for looking at long term trends. The formula for the minimum population estimate is:

MPE = [(Total Males/Complexes Checked) x 3] x Total Complexes over Survey Period

In 2008, vegetation composition and structure conditions were monitored on approximately 132,300 acres within the Thunder Basin (western portion of TBNG), Spring Creek (Spring Creek Unit of TBNG), and Inyan Kara (eastern portion of TBNG) Grazing Associations. The very large majority of the acres monitored met Forest Plan objectives for vegetation structure classes, including that for high vegetation structure. High vegetation structure is important nesting and brood-rearing habitat for sage-grouse. More information on the vegetation monitoring can be found in the rangeland health section below.

Results/Evaluation: Table 6 below illustrates the results of the 2008 lek monitoring. Within individual Geographic Areas (GA), the average number of males per lek is currently above the long-term (7-10 years) averages in the Hilight Bill GA (with a very small population), Cellars Rosecrans and Broken Hills GAs; and below the long-term averages in the Spring Creek and Fairview Clareton GAs. One lek was identified on NFS lands in the Upton Osage GA in 2008.

In 2008 the average number of sage-grouse males per lek was 14.1 sage-grouse males/lek which was essentially the same as 2007 (see Figure below). The 10-year high for TBNG was 16.4 sage-grouse males/lek in 2001. The average number of males per lek site and the fluctuations in sage-grouse populations on the Thunder Basin National Grassland have been similar to those displayed throughout northeast Wyoming (see Figure 3 below).

Table 6. 2008 Greater sage-grouse lek statistics by Geographic Area.

Geographic Area	Total Leks	Leks Checked	Active Leks
Broken Hills	6	6	4
Cellar Rosecrans	10	10	8
Fairview Clareton	8	3	2
Hilight Bill	7	4	1
Upton Osage	1	1	1
Spring Creek	5	4	1

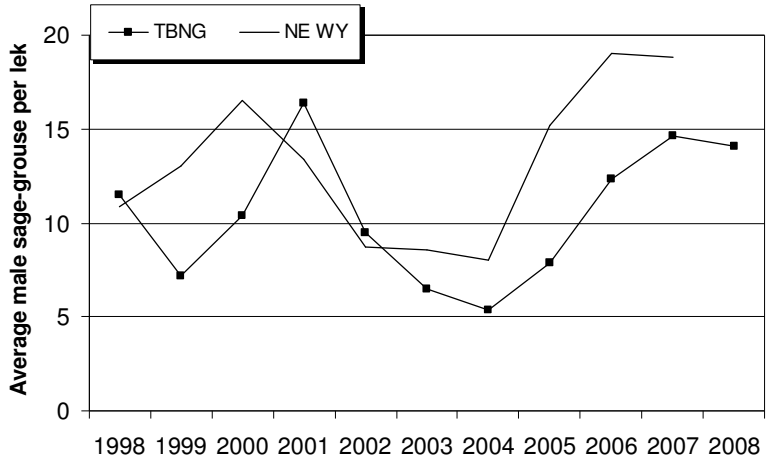

Figure 3. Average Male Sage-grouse/lek for TBNG and Northeast Wyoming (1998-2008)

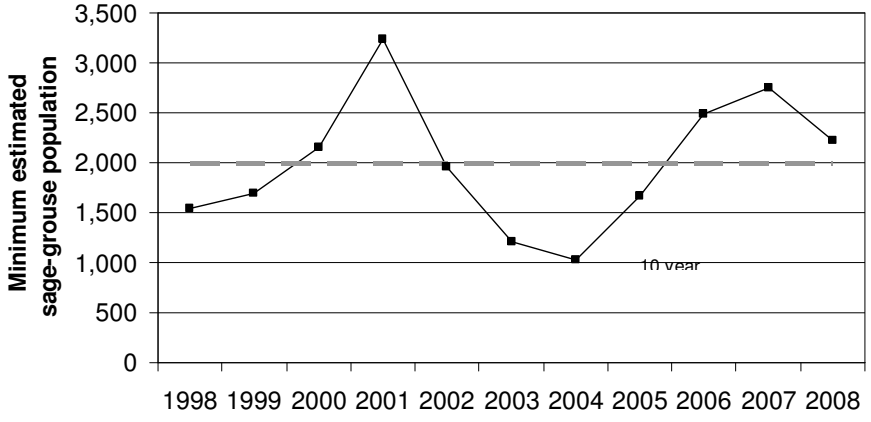

Figure 4. Minimum Estimated Sage-grouse Population and 10-Year Average.

Based on this measure, the *minimum* estimated population of greater sage-grouse on the TBNG in 2008 was estimated at 2,223 birds, which is a 19% decline from 2007. Since the 10-year low in 2004 the minimum greater sage-grouse population estimate on TBNG has increased from 1,027 to 2,749 individuals. Sage-grouse experience natural fluctuations in population levels from year to year. However, based upon the population estimates derived from annual lek surveys over the past ten years, the greater sage-grouse population trend on the TBNG appears to be relatively stable (See Figure 4) over that period of time.

All of the monitored allotments met the vegetative standards set for their specific allocation. Due to a prolonged drought in northeast Wyoming, most habitat conditions are currently recovering from inhibited plant growth and reduced water availability. More information on the vegetation monitoring can be found in the rangeland health section on page 27.

Recommendations: Continue to monitor greater sage-grouse lek activity.

Plains Sharp-tailed Grouse

Monitoring Protocol/Data Collected: Plains Sharp-tailed grouse are primarily monitored through lek counts, which can then be used to generate population statistics. Leks are monitored using the following parameters:

1. Counts should be conducted during the month following the peak of mating activity, which is usually early April in Wyoming. Research has shown that the highest numbers of male grouse are observed during this period.
2. Counts should be conducted from the ground. Counts from fixed wing aircraft are not accurate enough to be used for monitoring purposes.
3. Counts should be made as close to sunrise as possible and may extend for one hour after sunrise. The phase of the moon may affect use patterns on leks. During a full moon, grouse may display at night and consequently terminate activity earlier in the morning.
4. Counts should be conducted a minimum of three times each year per lek for at least one count every 7-10 days over a three to four week period.
5. Optimum weather conditions for counts are clear, calm days. Winds should be less than 20 mph since high winds inhibit lekking activity.

In addition to the monitoring described above, vegetation structure was monitored, which relates to sharp-tailed grouse habitat. More information on the vegetation monitoring can be found in the rangeland health section on page 27.

Results/Evaluation: The sharp-tailed grouse is a MIS for the Spring Creek and Upton Osage Geographic Areas. Five years of monitoring sharp-tailed grouse has resulted in a high of 12 leks being identified on or immediately adjacent to NFS lands in the TBNG (see Table 7). Currently, there is only one known sharp-tailed grouse lek in the Upton Osage Geographic Area. The Wyoming Game and Fish Department does not monitor sharp-tailed grouse leks in northeast Wyoming. Currently, the number of leks surveyed each year and the number of years that surveys have been conducted are too small to make an accurate assessment of sharp-tailed grouse populations on the TBNG.

The 2008 lek survey effort was much higher than in 2007 to have a better understanding of lek locations. This effort shows in the overall males counted on leks.

The following table illustrates the results of sharp-tailed grouse lek monitoring on the TBNG over the past six years, including 2008.

Table 7. Sharp-tailed Grouse Lek Surveys from 2003 - 2008.

	2003	2004	2005	2006	2007	2008
Leks Counted	2	5	10	12	10	16
Leks Active	2	5	6	6	2	7
Males Counted	9	30	30	64	11	106
Males/Lek Counted	4.5	6.0	3.0	5.3	1.1	6.6

In addition, 45,000 acres were administered to the established vegetation standards within the Spring Creek Grazing Association, and an additional 10,000 acres were also monitored and met standards within the Inyan Kara Grazing Association. All of the monitored allotments met the vegetative standards set for their specific allocation. Due to a prolonged drought in northeast Wyoming, most habitat conditions are currently recovering from inhibited plant growth and reduced water availability.

Recommendations: Continue to monitor sharp-tailed grouse lek activity.

T & E 1 - Black Footed Ferret

Goal 1.b, Objective 2
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***To what extent are NFS lands and their management contributing to the recovery and viability of black-footed ferrets?***

Monitoring Protocol/Data Collected: Acres of active prairie dog colonies (prey for ferrets, should they be reintroduced in the future); acres planned for ferret reintroduction; progress toward such a reintroduction effort.

Results/Evaluation: In 2005, Thunder Basin managed 47,890 acres for the potential reintroduction of the black-footed ferret. Black-tailed prairie dogs, the primary forage of ferrets, continued to increase in this area. Prairie dog populations decreased sharply in 2001 due to a sylvatic plague epidemic. Populations have since rebounded somewhat but continue to be very low (see Figure 2 on page 16).

To date no black-footed ferrets have been released on the TBNG as the current total acreage and distribution of black-tailed prairie dogs is not likely to support a ferret reintroduction at this time due to the plague epidemic.

The District continued work on a Black-footed Ferret Reintroduction Strategy and the Prairie Dog Management Strategy. This effort includes a Grassland Plan amendment that is currently in development. The amendment is proposing to change the boundaries of the ferret re-introduction habitat (MA 3.63) to manage reintroduction

habitat to where there is more available habitat (prairie dog colonies) and to provide for long-term management of prairie dogs in support of ferret reintroduction.

The District is also continuing to assist the USFWSin the on-going development of a "10J Rule" which would designate ferrets reintroduced to Thunder Basin as an "Experimental and non-essential population" which allows for more flexibility in the management of the ferrets without affecting grazing and prairie dog management on private lands within the experimental population area. Acres of active prairie dog colonies will continue to be mapped in order to monitor habitat conditions prior to the release of ferrets.

Recommendations: Continue to manage for increasing prairie dog numbers – especially in and around the Black-footed Ferret Reintroduction Habitat Management Area (MA 3.63). Continue to plan and prepare for ferret reintroductions.

Multiple Benefits to People

Recreation 1 - Trails

Goal 2.a Objectives 1 and 7
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***To what extent are trails managed to meet regional standards and to minimize conflicts among users?***

Monitoring protocol/data collected: Miles of trail maintained to standard, reports of conflicts among trail users.

Results/Evaluation: The Thunder Basin National Grassland has 20 miles of single track motorized trail (see Table 8). All of the maintenance work done on the Upton/Osage trails is done by a volunteer group.

This trail system is used for a motorcycle enduro event one day each year. This is part of a larger enduro circuit, and has been deemed one of the best in the Rocky Mountain circuit.

Table 8. FY08 Trails Meeting Agency Standards.

Trails on District (miles)	Trails meeting agency standards (miles)	Percent (%)
20	20	100%

All of these trails are single-track motorized (designated motorcycle trails), and there has been an upsurge in ATV use on these trails, which has affected the trail quality for motorcycle users.

Recommendations:

- Provide on-site training to the volunteer group for trail maintenance, reconstruction and construction techniques.

- Secure funding to purchase one or two dirt bikes so the trails can be patrolled regularly and checked for maintenance needs

Travel and Access 1 - Effects of Off Road Vehicles

Legally Required Monitoring Item
Goal 2.a and 4.a
Frequency of Measurement: Two Year
Reporting Period: Two Year

This monitoring item asks the question:

What are the effects of vehicle use off roads?

Monitoring protocol/data collected: This item is assessed using field observations, Forest patrol responses, and official law enforcement statistics.

Results/Evaluation: In 2003, a Special Order was signed by Forest Supervisor, Mary Peterson, which restricted motorized travel to existing roads and trails. Law Enforcement statistics for the past five years (see Table below) are of limited value in evaluating off-road use trends as the amount of patrolling has varied year to year. Also, since much of the off-road use occurs out of sight of the patrolling (which occurs on legal roads) it isn't observed, so much of the off-road use goes undetected. However, the statistics do reflect some of the effects of dedicated patrolling during hunting season, which historically had been the largest impact. During the 2002 hunting season (October, 2002, which is in FY2003), very little patrolling occurred because of changes in personnel. The following year a large emphasis was placed on off-road issues during hunting season; especially closing any illegally-created trails, which is reflected in the larger number of incident reports and violation notices. The result is a downturn in off-road incidents during hunting season in subsequent years. Between active patrolling and enforcement, the message had gotten through and incidents markedly decreased.

Table 9. Off Road Vehicle Violations on TBNG from 2003 thru 2008.

Fiscal Year	Warnings	Incidents	Violations/ Tickets	Total
2003	1	1	0	2
2004	0	18	3	21
2005	5	1	4	10
2006	2	9	1	12
2007	1	6	2	9
2008	4	12	4	20

The more recent statistics (2007/2008) reflect mostly spring patrolling efforts in the Weston portion of the grassland. It was discovered that this area sees a marked upsurge in use from March 1 through May 31. Recreationists are drawn to the area in spring due to a nearby popular reservoir and because other public lands are often still under snow. Additionally, the weather is generally pleasant and the ground usually dry during this period. In a study conducted in the summer of 2004 (Weston Recreation Use Survey, October 2004), the average number of vehicles counted in

Weston per day was 27. This contrasts with the 50 to 100 vehicles observed this spring. The Bureau of Land Management (BLM) Ranger, who patrols the area regularly as it borders BLM administered land, reported that he has observed as many as 200 vehicles at a time.

Everywhere on the grassland, year-round recreational all terrain vehicle (ATV) use appears to have increased, while hunting use of ATVs may be decreasing. Travel management planning is scheduled to be completed in 2009 which will designate roads and trails open to motorized use.

The grassland is unique in that it is generally open for use the entire year, with just a few areas and times that it is inaccessible to motorized use. The Upton/Osage area and parts of the Spring Creek unit can become snowed in, but the heart of the grassland is generally open and dry year-round. Use occurs throughout the grassland, however, the hardest hit area is the Weston portion of Spring Creek. Other hot spots are the Rochelle Hills, and the Upton Osage area which also has towns nearby for easy access to public lands. Also, because the minerals industry is the predominant employer, most folks in the area have rotating schedules throughout the week. As a result, recreational use occurs throughout the week and does not peak on weekends as occurs elsewhere.

Effects of Off Road Use: Although the law enforcement statistics do not reflect an increase in off-road use, observations indicate a marked increase of off road use with a subsequent increase in soil, water resource, and vegetation disturbance.

Effectiveness of Past Actions to Reduce Off Highway Vehicle (OHV) Use: Physical barriers have not worked in the past on the open grassland. Some users just go around the barrier. Signing efforts have been increased to notify users to keep on established routes. We are also working effectively with the local Wyoming State Game and Fish Department wardens and biologists to get information on OHV users as they find them.

Education and enforcement efforts during hunting seasons these past years have proven very effective. As stated previously, observations indicate that off-road use has decreased during hunting season.

FY08 Actions taken to address this problem: The district hired a dedicated Forest Protection Officer (FPO) to patrol the grassland in 2008, and he was able to patrol steadily from mid-May to the end of October. Hunting season was patrolled fairly well with three pairs of patrollers every weekend and one to two pairs during the week, which covered the heart of the grassland (Cow Creek Buttes, Fiddleback and Rochelle Hills).

Recommendations: A site specific analysis of existing roads, initiated in 2007, will be completed in 2009 for the Thunder Basin National Grassland to determine which roads will be designated for motorized use. All other roads will then be closed to motorized use. Once this designation is completed, enforcement of illegal vehicle use off roads should be improved. To improve enforcement, it is recommended to:

- Continue to seek funding to support having trained Forest Protection Officers in the field.

- Test and evaluate a variety of methods to effectively close unnecessary travel routes on the Grassland.

Community Relations 2

Goal 2.c
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

What are the effects of National Forest System Management on adjacent communities?

Monitoring protocol/ data collected: This monitoring item is answered using National Grasslands 25% payments to counties from the National Grassland.

Table 10. 25% Payments to Counties for Thunder Basin National Grassland (in dollars).

County	TBNG Acres	2004 Payment	2005 Payment	2006 Payment	2007 Payment
Campbell	145,654	287,141	215,602	288,676	140,987
Converse	175,798	346,567	267,680	376,449	183,354
Crook	302	595	453	624	305
Niobrara	840	1,656	1,260	1,735	847
Weston	226,625	446,767	336,599	463,511	226,374
Total	549,219	1,082,726	821,594	1,130,995	552,367

Results/Evaluation: The 25% payment to counties for National Grasslands (7 U.S.C. 1012) provides 25% of net (rather than gross) receipts from grazing, minerals (excluding royalties from coal) and other uses of the national grasslands directly to counties where the grasslands are located. These funds are to be used for roads and schools. These payments are calculated on a calendar year basis and are given in Table 10 above. The 2008 data will be available for the FY09 monitoring report. In 2005, the Minerals Management Service withdrew funds to cover a large royalty overpayment from previous years, which accounts for the drop in payments from 2004 to 2005. The drop in payments from 2006 to 2007 is thought to be for the same reason.

TBNG has the largest area of public land in these counties and so has the majority of tourism activities related to outdoor recreation, such as hunting and sightseeing. One measure of the effects of tourism is to consider the money spent by travelers in the area. Travel related employment ranges from 4 to 8% of total employment by county. Revenue from travel spending has increased over the past 10 years in all counties, most markedly in Campbell and Converse counties. Wyoming tourism data can be found at the following website:

http://www.deanrunyan.com/impactsWY.html

Recommendations: Continue tracking payments to grassland for this monitoring item.

Comparison of Estimated and Actual Outputs and Services

Legally Required Monitoring Item
Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***Are the projected annual outputs and services being met annually and at anticipated costs?***

The outputs tracked for this monitoring report include forage provided to domestic livestock, noxious weed control, terrestrial wildlife habitat, and minerals permit processing and operations, as these are the primary outputs of the Thunder Basin National Grassland. Costs are tracked for the Douglas District of the Medicine Bow – Routt NFs and Thunder Basin National Grassland. The figure below does not reflect administrative costs, which are common to all program areas (cost pools). Costs shown do include costs for the Laramie Peak Unit as that area is also administered by the Douglas District. Fiscal Year (October 1 to September 30th) allocated budgets for 2003 to 2008 are given below in Figure 5.

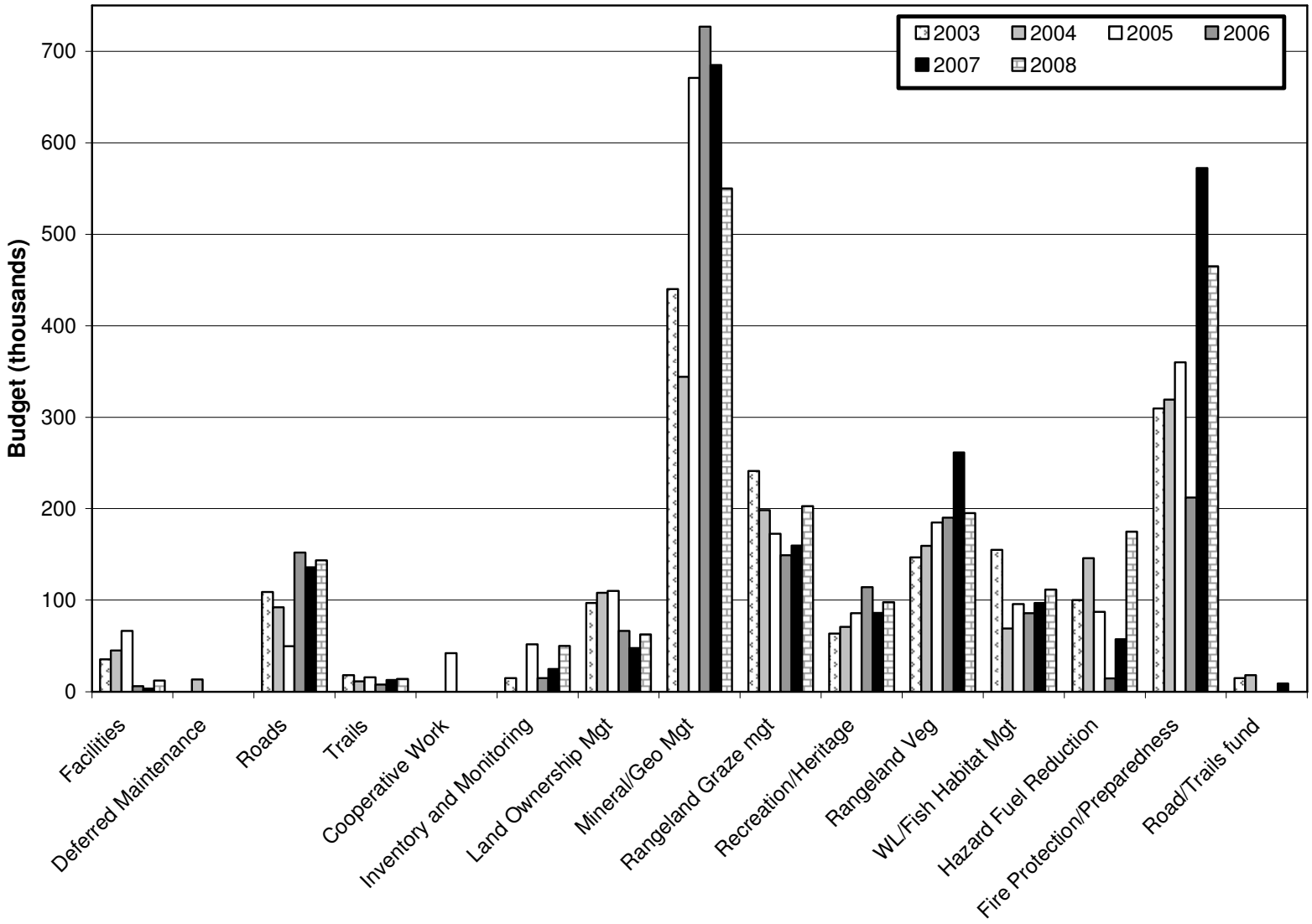

Figure 5. Budget for 2003 - 2008 for The Douglas Ranger District of the Medicine Bow - Routt NFs and Thunder Basin National Grassland. (Graph does not include costs for administrative programs common to all program areas).

Rangeland Outputs

Background: 2008 was the ninth consecutive year of this extended and extreme drought in Wyoming. Up until 2004, the Grassland had received scattered, moderate amounts of winter and spring moisture, and conditions had been somewhat better than other areas of the state. However, in 2004 it became the Grassland's turn as the Thunder Basin had probably the worst climatic conditions to be found anywhere across the state and the Region. Some areas, particularly along the Antelope Creek and Cheyenne River drainages, had little winter and no spring moisture, and much of that area did not ever green up. Rainfall patterns in 2005 were quite variable, with some places showing little improvement over the previous grazing season while many others had very timely, but limited, spring rains that produced slightly above-average forage production. Nearly all areas cured out early with the extended hot, dry summer.

In 2006 the Grassland was once again the hardest-hit area of the state. There was very little winter precipitation. The northern and eastern reaches of the Thunder Basin benefited somewhat from a wet spring snowstorm. But much of the southern and central portions received very little winter precipitation and even less spring/summer moisture – none in much of the area. The Antelope Creek and Cheyenne River drainages and surrounding areas once again suffered the worst. Soil moistures were extremely low. Some areas were impacted by wind (and occasionally water) erosion; the hardest-hit areas experienced recent fires.

In 2007, southeastern Wyoming once again received less than average winter precipitation. Spring 2007 rains were a little better in some areas; however, amounts were highly variable across the landscape. Many areas did receive infrequent, highly scattered, summer storms, but overall moisture across most of the Grassland was again below average. Most of eastern Wyoming experienced below-average winter precipitation again in 2008. However spring rains on the Grassland approached normal timing and amounts. Thunderstorm patterns continued throughout the season; the 2008 year was the closest to "normal" since 2003.

Grazing Levels

Table 11. Livestock Grazing Use for 2004 – 2008 (in AUMs).[3]

Livestock Grazing	Planned Level[4]	2004	2005	2006	2007	2008
Cattle		89,580	102,432	78,237	60,245	81,021
Sheep		3,881	4,739	3,739	7,568	8,261
Total Use	**115,430**	**93,461**	**107,171**	**81,976**	**67,813**	**89,282**

Nearly all producers have liquidated some portion of their herds; some have sold everything. Many have gone out-of-state to lease forage for the remaining portions of their herds. Many ranchers replaced a portion of their liquidated herds, but a few remain 100% unstocked for resource protection.

[3] Grazing use is measured using animal unit months (AUMs) which is a standard unit for each type of livestock (for example, 1 AUM for cattle is the amount of forage that one cow/calf pair would eat in one month).
[4] From Supplemental Table S-2 of the FEIS.

A large number of the allotments were benefited by delayed entry until after seed-set in the middle of June. Non-use of animal numbers for resource protection averaged about 22%, with the total amount of grazing use at only about 77% of the projected Grassland Plan level – higher than 2006 and 2007, but less than the years 2000-2005.

Recommendations: Continue to report actual grazing use each year in relation to the planned level, and explain in the narrative section the annual climatic fluctuations that may account for the differences.

Rangeland Health

Rangeland vegetation structure and composition have been measured across the entire Grassland (2004-2008).

Monitoring Protocols/Data Collected: Rangeland analysis has been conducted across the entire Grassland (Spring Creek unit in 2004, the Thunder Basin area in 2005-2006, and the Inyan Kara area in 2007-2008). Cover-Frequency transects were read on most allotments, in addition to photopoints. Robel pole[5] readings were taken at established transect intervals to measure vegetation height. Visual inspections of nearly all pastures were made to verify and extrapolate transect results. Parker 3-Step permanent transects were re-read in many locations as well.

Each Geographic Area has desired vegetation structure conditions set forth in the Grassland Plan (Chapter 2). As defined in Appendix H of the Grassland Plan, High structure is 7 inches or greater, Low structure is 2 inches or less, and Moderate is 2 ½ to 6 ½ inches in height. Vegetation structure inventory data are summarized and compared to desired conditions in Table 12 below.

Table 12. Summary of Rangeland Vegetation Structure across the Thunder Basin National Grassland (552,480 acres).*

Vegetation Structure	High	Moderate	Low
Grassland Plan Desired Condition*	29% - 39%	38% - 48%	18% - 28%
Existing Condition as of 2008:			
Percent	28%	52%	17%
Acres	152,157	288,730	95,222

* The percentage across the entire Grassland is computed by using a weighted average for all of the acres across all six Geographic Areas. Note that 3% of the Grassland acres are within the permit boundaries of active coal mines.

Measured at the greater landscape scale across all 550,000+ Thunder Basin National Grassland acres, current management is within 1-4% of meeting desired vegetative structure. All categories have a 10% range of acceptable levels.

Actions needed in the next 5-10 years to meet ***overall*** Grassland Plan Desired Condition:

1. Conditions should be measured by Geographic Area because the different GAs have different management objectives and desired vegetative conditions.

[5] Robel Pole is a banded pole, which is used to measure the amount of vegetation biomass present at the time of the survey (Robel et al).

2. For the most part, across most allotments, maintain existing vegetative structure. Slight modifications of use in some pastures of some allotments will be adequate to accomplish the following changes in categories.
    a. Move about 5,000 – 10,000 acres from Moderate structure to Low structure.
    b. Move about 10,000 – 20,000 acres from Moderate structure to High structure.

Each Geographic Area has desired vegetation seral stages set forth in the Grassland Plan (Chapter 2). Vegetation composition data are summarized and compared to desired conditions in Table 13 below.

Table 13. Summary of Rangeland Vegetation Seral Stages for the entire Thunder Basin National Grassland (552,480 acres).*

Vegetation Seral Stage	Late	Late Intermediate	Early Intermediate	Early
Grassland Plan Desired Condition*	12% - 22%	28% - 38%	28% - 38%	14% - 24%
Existing Condition as of 2008:				
Percent	12%	37%	28%	20%
Acres	63,268	206,268	153,924	108,879

* The percentage across the entire Grassland is computed by using a weighted average for all of the acres across all six Geographic Areas. Note that 3% of the Grassland acres are within the permit boundaries of active coal mines.

Measured at the greater landscape scale across all 550,000+ Thunder Basin National Grassland acres, current management is already meeting desired vegetative seral stages in all four categories.

Actions needed in the next 5-10 years to meet ***overall*** Grassland Plan Desired Condition:

1. Conditions should be measured by Geographic Area because the different GAs have different management objectives and desired vegetative conditions.
2. Since 3 of the 4 categories are near the outside of their ranges, efforts should continue to move toward the middle of those ranges. For example, management of 10,000 – 20,000 allotment/pasture acres could be slightly adjusted to move them from Late Intermediate up into Late, and a similar amount could be moved downward into Early Intermediate.

Nearly 213,000 acres (32%) were reported as administered to standard across the Grassland in 2008. About 132,300 pasture acres were monitored over the course of the 2008 field season across all areas of the Grassland.

Recommendations: Annual monitoring efforts will continue to evaluate where minor changes are needed in order to meet overall objectives (such as for prairie dog management emphasis areas) as well as to meet vegetation objectives described in the Grassland Plan.

Noxious Weed Control

Funding for noxious weed treatment, as well as assigned target acres, was greatly reduced in 2008. As a result, only 302 acres of noxious weeds were treated on the Grassland – the lowest amount in many years (see Table 14 below). Primary species treated were the same as in the past: leafy spurge, diffuse knapweed, saltcedar, cheatgrass, and Canada thistle.

The district is focusing much of its efforts on inventorying for the presence of saltcedar (tamarisk), a serious threat to riparian ecosystems. Currently, saltcedar is limited to the Cheyenne River and Antelope Creek riparian corridors and their side drainages. Every known population is treated yearly and the inventoried area is increased each year to detect unknown populations. With this approach it is considered still possible to eradicate this species from the Grassland.

Figure 6. Saltcedar (light colored shrubs) on TBNG.

Table 14. Noxious Weed Treatment (acres).

2004	2005	2006	2007	2008
327	430	580	853	302

All 5 counties, all 3 Grazing Associations, and the Thunder Basin Prairie Ecosystem Association are cooperating parties with the Forest Service in controlling noxious weed and invasive plant infestations.

Recommendations: Continue to report acres of noxious weeds treated each year, along with reasons for annual fluctuations in acres and species of weeds treated; data are useful to discern trend of infestations and treatments.

Minerals

The following administration and permit processing was accomplished on the TBNG during 2008.

Energy Operations Processed: In 2008, 99 Energy Operations were processed, and are broken down as follows:

- 1 Oil/Gas Sundry Notices
- 11 Mineral Related Special Use Permits (SUP) (tank batteries, powerlines to wellsites, pipelines, etc)
- 9 Mineral Material Permits processed (1,200,000 tons for $780,000.00)
- 78 Oil/Gas Lease requests processed and sent to the Regional Office.

Operations Administered to Standard: In 2008, 593 operations were administered to standard, including:

Figure 7. Oil well on TBNG.

- 2 Bonded Mineral Material Sales
- 528 Oil/Gas well inspections
- 34 Follow up inspections
- 1 Bioremediation inspections performed
- 4 Surface Coal Mine Plans
- 21 Mineral related Special Use Permits
- 3 Geologic Resources

Oil and Gas Wells: There were 5 new oil/gas wells drilled, 7 Bond releases for wells were processed, and 2 spills inspected and administered.

Geologic Resources: Prepared 21 Geologic Permits and Reports.

Groundwater Resources: Completed seven hydro geological evaluations for water wells.

Table 15. Summary of mineral activities 2004-2008

	FY2004	FY2005	FY2006	FY2007	FY2008
Oil & Gas Well Inspections	470	495	576	595	528
Follow-up Inspections	23	25	34	25	34
Mineral-related SUPs	5	20	n/a	n/a	21
Bond releases	2	2	5	3	7
Spills	2	4	3	2	2

Scientific and Technical Assistance

Administration – Action Plans in Goals and Objectives

Goal 3, Objectives 1,2 & 3
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***Are the action plans identified in Goal 3 - Scientific and Technical Assistance, being completed on schedule?***

Monitoring Protocol/Data Collected: A review of the opportunities to implement national recovery plans was conducted and actions taken in support of a National Recovery Plan are described.

Objective 1; Inventory and Monitoring:
Inventories and monitoring were conducted for nesting raptors, breeding sage grouse, breeding sharp-tailed grouse, bald eagle, prairie dogs, breeding songbirds and foraging bats. The results of prairie dog and grouse monitoring are discussed above in the *MIS 3 – Population Trends* monitoring item on page 16.

Raptors

Monitoring Protocol/Data Collected: Over the last six years, TBNG has cooperated with the Wyoming Game and Fish Department, Non-Game Program, and the Buffalo, Casper, and Newcastle offices of the Bureau of Land Management in the surveying and monitoring of nesting raptors in and around the TBNG. Aerial surveys were conducted throughout the TBNG and surrounding area. Species monitored include: Bald eagle, Golden eagle, Ferruginous hawk, Swainson's hawk, Red-tailed hawk, Great horned owl, Long-eared owl, Short-eared owl and Prairie falcon. This database includes information on over 1,000 nest sites (not all of which are active at any one time).

Table 16. Raptor Nests Monitored on TBNG 2003-2008.

Year	Total Inventoried	Number Active	Percent Active
2003	208	37	18
2004	155	62	40
2005	104	64	61
2006	337	152	49
2007	151	76	50
2008	231	98	42

Results/Evaluation: The raptor monitoring program provides basic information on nesting habitat as well as nesting activity. This information is used in support of a variety of land management activities, such as oil and gas well development or other activities, in order to avoid impacts on nesting activity.

Northern harrier nests are generally located in tall grass, often times within riparian or wetland vegetation. Because these nests are usually obscured from view, aerial identification of Northern harrier nests is difficult. There are only two known locations of harrier nests on the TBNG even though these raptors are regularly seen hunting throughout the Grassland.

Ferruginous hawk: The number of Ferruginous hawk nests monitored by year are listed in Table 17 below. However, it does not represent a totally accurate percent of active nests. Each year, specific areas are targeted for survey, leaving other areas with an undetermined status for many nests. Depending on the habitats available, the raptor species using it will vary. The active category only represents the minimum active nests found on the Thunder Basin during that one year.

Figure 8. Ferruginous Hawk on TBNG.

Table 17. Ferruginous Hawk Nests Monitored 2003-2008.

Year	Total Inventoried	Number Active
2003	146	17
2004	41	12
2005	45	19
2006	144	46
2007	46	14
2008	56	17

Over the last 6 years, aerial and ground surveys have been conducted for nesting raptors on portions of the TBNG. The extent of the survey varied based on available funding, and at no time has the entire TBNG been surveyed completely. Table 17 illustrates the results of each year's surveying of a portion of the Grassland.

Table 18. Bald Eagle Nests Monitored 2003-2008.

Year	Total Inventoried	Number Active
2003	5	1
2004	5	1
2005	6	1
2006	7	2
2007	7	1
2008	7	2

Bald eagle: Over the past six years of raptor monitoring, the number of known Bald eagle nesting locations has increased by two sites as shown in Table 18.

Bats

Monitoring Protocol/Data Collected: Bats were again surveyed on the TBNG in 2008 using two bat identification techniques (mist netting and ANABAT ultrasonic detection). Mist nets may be used to assess the presence or absence of bat species, determine the species composition of bat communities, and/or determine the relative abundance of bat species. Mist nets are deployed ½ hour prior to sundown and monitored continuously for a minimum of 2.5 hours. All bats are removed as soon as possible after capture, identified and released. Not all bat species have the same capture probabilities and some may go undetected even though they are present at the survey site. Also, some less abundant species may successfully avoid capture during a single sample period.

To effectively detect the full suite of species present at a given site, an ANABAT Ultrasonic Bat Detector is utilized in conjunction with mist nets. This type of survey is used to document presence/absence and species composition of bat communities. It provides the ability to detect all species, including those not easily mist netted. The ANABAT records bat calls while they are foraging; the calls are then run through a computer program to identify the particular bat species making the call.

Survey locations were chosen based on the likelihood of encountering several species of bats and to survey in areas infrequently sampled during the 1994 – 1996 statewide bat survey of caves and abandoned mines. All summer bat surveys were conducted between June and October of 2008. These surveys are consistent with objectives and management goals developed in the Land and Resource Management Plan for the TBNG, the Wyoming Bat Conservation Plan, Wyoming Game and Fish Department, Wyoming Bat Working Group, Western Bat Working Group and Bat Conservation International.

Results/Evaluation: Because of a focused effort to monitor bats on the Medicine Bow-Routt NFs, the Douglas Ranger District was restricted to monitoring for bats at project locations on Thunder Basin National Grassland in 2008. Both were new locations in the Spring Creek Unit of the Grassland.

Table 19. TBNG Bat Survey Results 2005-2008.

Common name	Scientific name	2005	2006	2007	2008
Little brown bat	*Myotis lucifugus*	Y	Y	Y	Y
Western big brown bat	*Eptesicus fuscus*	Y	Y	Y	Y
Long-eared myotis	*Myotis evotis*	Y	Y	N	N
Long-legged myotis	*Myotis volans*	Y	Y	N	N
Fringed myotis	*Myotis thysanodes*	Y	Y	N	N
Western small-footed myotis	*Myotis ciliolabrum*	Y	Y	Y	N
Red bat	*Lasiurus borealis*	Y	N	N	N
Hoary bat	*Lasiurus cinereus*	N	Y	Y	Y
Northern long-legged myotis	*Myotis septentrionalis*	N	Y	N	N

Over the past four years bats have been monitored at 17 sites on the TBNG. Nine different species have been identified, including the fringed myotis (a sensitive species) (see Table 19). To date, there have been no detections of the Spotted or

Townsend's big-eared bat. In addition, bat surveys have increased the known range of the Red bat to include areas near the Cheyenne River.

Results of these surveys have helped identify species composition as well as important habitats for bats on the TBNG, and also help planning efforts to minimize impacts to bats. Additionally, information collected has contributed significantly to the knowledge of bats and habitat use on the TBNG and throughout northeast Wyoming.

Recommendations: The presence of bat feeding and breeding activity within the administrative boundary of the TBNG reveals the importance and need for additional surveys. The ANABAT has proven to be an accurate and time efficient method of sampling for bats to establish presence/absence of individual species. ANABAT will be used at selected locations in 2009 and subsequent years to document the bat species present. The data will be used to establish current distribution, and will also be used by the Wyoming Game and Fish Department to address range and distribution objectives for the 18 bat species that are known to occur in Wyoming as listed in the 1996 Nongame Bird and Mammal Plan.

Objective 2: Provide Research Results:

Ferruginous hawk: The TBNG continues to participate with a variety of partners in the *Tri-National Investigation of Ferruginous Hawk Migration*. Several Ferruginous hawks from the TBNG have been trapped and equipped with radio collars as a part of this effort. The site below provides information about this raptor species and up-to-date information about the Tri-National Migration Study.

http://www.ferruginoushawk.org/index.html

Objective 3: Establish new monitoring and implement existing monitoring for MIS.

Monitoring was continued for all known sage and sharp-tailed grouse leks. New leks were added into the established monitoring plan. We continued to monitor activity of black-tailed prairie dog colonies and new colonies were entered into monitoring plans.

Recommendations: Continue to monitor, inventory, and pursue administrative studies, as appropriate. Especially maintain inventory and monitoring of sensitive species, MIS, and species of local interest. The continued viability of sensitive species is being maintained through project level surveys to detect occurrences, avoidance of sensitive species occurrences in project implementation, and implementing conservation measures to minimize impacts to populations or habitats.

Effective Public Service

Threatened and Endangered Species – Action Plans

Goal 4b
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

Are actions identified in national recovery plans for threatened and endangered species being implemented where opportunities exist on the national grasslands and forests?

Wildlife

Monitoring Protocol/Data Collected: With the federal de-listing of the Bald eagle and no federal listing for the Mountain plover, the Black-footed ferret is now the only federally listed wildlife species relevant to the TBNG.

Results/Evaluation: As part of the recent draft National Black-footed Ferret Recovery Plan (US Fish and Wildlife Service (USFWS), 2006), TBNG has been identified as a potential reintroduction site. The following items were taken from the draft Recovery Plan, and identify actions needed to recover ferret populations:

Figure 9. Black Footed Ferret (photo courtesy of the USFWS).

1. Maintain a captive ferret population of optimal size and structure to support genetic management and reintroduction efforts.
2. Complete the search for remnant wild ferret populations to support genetic management and reintroduction efforts.
3. Reduce disease-related threats in wild populations of ferrets and associated species.
4. Ensure sufficient habitat to support a wide distribution of self-sustaining ferret populations.
5. Establish free-ranging populations of ferrets to meet downlisting and delisting goals.
6. Promote partner involvement and adaptive management through regular programmatic review and outreach.

Items 4-6 are action items that TBNG can contribute toward ferret recovery. To ensure sufficient habitat is available, TBNG has established a prairie dog shooting

closure, maps prairie dog colonies annually, and through LRMP direction provides additional standards and guidelines for activities within prairie dog colonies. LRMP direction also outlines ferret reintroduction habitat by establishing a management area designation for black-footed ferrets. TBNG is also currently pursuing a 10(j) designation for the identified ferret reintroduction habitat. This would allow for release of black-footed ferrets on TBNG as nonessential experimental population. As a part of this process, the TBNG has developed a prairie dog strategy, which involved other Federal agencies, state agencies, private landowners, and a private land owner group. Programmatic review of the Forest Plan/Grassland Plan occurs annually.

Proactive management actions for TBNG include developing a prairie dog strategy involving partners, pursuing a 10(j) designation, and continually monitoring prairie dog populations. Many of these partnerships have been long in the making, and are now at a place where we are making new strides in the management of prairie dogs and the reintroduction of ferrets. These partners include: US Fish and Wildlife Service, Wyoming Game and Fish Department, Thunder Basin Prairie Ecosystem Association, Thunder Basin Grazing Association, The Nature Conservancy, Defenders of Wildlife, Coal Companies, Biodiversity Conservation Alliance, Bureau of Land Management, etc. These actions and partnerships are expected to provide long term conservation of prairie dogs, and contribute to a future ferret reintroduction.

Recommendations: Continue to monitor active prairie dog colonies within the black-footed ferret recovery area.

Plants

Monitoring Protocol/Data Collected: Project level botanical surveys, Wyoming Natural Diversity Database (WYNDD) botanical surveys and data.

Figure 10. Ute Ladies' Tresses

Results/Evaluation: There are now two T/E plant species for which potential habitat has been identified on the TBNG.

- Blowout penstemon, *Penstemon haydenii*, endangered.
- Ute ladies' tresses, *Spiranthes diluvialis*, threatened.

National Forest System lands provide the basic habitat for these plant species. In addition, activities on NFS lands of the TBNG have been identified to affect potential habitat on adjacent lands.

The potential for habitat (blowouts and sand dunes) for blowout penstemon was identified by Fish and Wildlife Service (FWS) Wyoming Field Office in late 2008 (Kelly 2008). The TBNG sits between the 2 known population centers in Nebraska and central Wyoming. There will be additional analysis to identify the locations of

potential habitat in FY09. There is a draft recovery plan for blowout penstemon (Fritz et al. 1992).

Potential habitat for Ute ladies' tresses was identified in the analysis for the Thunder Basin Analysis Area Vegetation Management Final Environmental Impact Statement (FEIS) and in the analysis for additional easement for the Burlington Northern Santa Fe Railroad Logan Hill to Reno Junction project in 2007. The effects to potential habitat resulted in biological determination of "may affect, not likely to adversely affect (NLAA)" was made for these projects. These projects were implemented in 2008. The Dakota Minnesota and Eastern Railroad wetland mitigation project (which is proposing to excavate shallow depressions to create wetlands) may affect habitat and is currently undergoing analysis and consultation. Several other projects being planned in FY08 were modified so that no habitat was affected.

There is a draft recovery plan for Ute ladies' tresses (USFWS 1995).

Conclusions: All actions were in compliance with the draft recovery plans for Blowout penstemon (Fritz et al. 1992) and Ute Ladies Tresses (USFWS 1995).

Recommendations: Continue to monitor this item. There were no changes to the plan identified as needed.

Implementation Monitoring

Implementation of Standards and Guidelines

Legally Required Monitoring Item
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***Have site-specific decisions successfully implemented the Land and Resource Management Plan Direction?***

Monitoring Protocol/Data Collected: There was an Interdisciplinary Team (IDT) monitoring trip in May 2008 by the Forest Monitoring and Evaluation Team which reviewed three projects. The results of these reviews are summarized below.

Upton Osage Prescribed Burn

Project Description: The objectives of the burn were to reduce fuels adjacent to private land and residences, reduce potential of fire spread into forested stands, reduce brush component from 30 to 80% in a mosaic, reduce juniper trees from 30% to 100% and maintain 4 hard snags in timbered drainage. The area is in management area 4.22 (high use recreation).

Another objective was to create more openings for sage grouse as there currently are no leks in the area. However the high level of activity in the area due to proximity to the houses, road and golf course may be a reason for there not being any leks.

Local landowners requested that some juniper in the drainage be retained to provide wildlife habitat, which is incorporated into the objective to leave four snags in the drainage. The burn was also designed to have irregular edges to create natural appearing edges.

The design criteria related to cheatgrass was to spray the area with the herbicide approved for cheatgrass control, Plateau. Mitigation for cheatgrass was to spray the area with plateau after the burn and to monitor the area to determine if additional spraying is needed. Additional mitigation was to have the vehicles and equipment used in the burn washed to avoid spreading cheatgrass to other sites.

The prescribed burn was implemented in the spring of 2008, and was contained to the site by mowing a strip around the area. This strip was also used to drive vehicles in to implement the burn.

The team felt the burn achieved the objectives. A lower percentage of brush was burned closer to the road where the burn was initiated, probably due to lower temperatures. As the afternoon temperatures increased, the fire burned more of a mosaic as it moved toward the forested area.

Some juniper was left alive in some areas and near the draw. At the end of this season it will be clear how much of the juniper was killed by the fire.

Table 20. IDT Evaluation of the Upton Osage Prescribed Burn.

Resource Area	Evaluation
Fire/Fuels	The fuels objectives to keep fire away from the forested area and to reduce the brush component to make structure protection more feasible were met. The Fire Program Staff would have liked to have seen a larger reduction of sage and juniper. The resulting mosaic is dependant upon the conditions during burning so the objectives must incorporate the desired range of outcomes and not an exact percentage of vegetation change.
Scenery	The desired condition is to maintain scenic quality in this management area. Cutting down the fire burned juniper would improve scenic quality from state highway 116. The local landowners did have concerns that the burn would result in unacceptable views from their property. However, after the burn, they expressed surprise at the little impact the project had on their views.
Water Resources	The project area is generally dry, with a drainage running through the middle and a stock pond. Using a brush hog to mow the fireline is a very low impact method. Recommend barrier or sign to prevent the two tracks from becoming established roads.
Engineering	From an engineering perspective, the fire went well. The two track on the north side is a system road which may be closed under the upcoming travel management decision. The new two track from the vehicles driving around the area during the burn should be checked for use and closed if necessary.
Recreation	Recreation values were maintained with this project; the increased forbs may increase game and hunting opportunities which would

	improve recreation opportunities.
Wildlife	Forbs have increased after the burn, which is beneficial for sage grouse. The herbicide used to control cheatgrass should not harm the forbs.
Renewable Resources	This project had multiple objectives – fuels and wildlife - so it needs to be clear how to meet all the objectives.
Range	Crested wheatgrass, a non native grass, is present in the area. It would be possible to graze for a specific time period after the burn, when it is the only forage. This would decrease the wheatgrass, and if burned again in the fall, this would likely reduce the percentage of crested wheatgrass in the area. However the decision would not allow additional burning unless additional NEPA was completed.

Recommendations:
Prescribed fire decision documents should allow for multiple days of prescribed burning to accomplish objectives. Often it is difficult to meet objectives in one day of burning.

If crested wheatgrass is within the burn area and it is desirable to reduce the crested wheatgrass population, consider using a combination of fire, grazing and possibly herbicides as tools to reduce crested wheatgrass and increase desired native species.

When designing a prescribed burn with multiple (and possibly competing) objectives, prioritize the objectives to determine the desired vegetation outcome.

Monitor use on the two tracks around the burn area and take action as needed to keep traffic off of the two tracks not on the road system.

Wildhorse Wells

Project Description: This project included oil well development on the Spring Creek Unit. Prior to finalizing the proposal for this oil well project, the district looked at 11 sites to give a pre-opinion on the locations. The company came back with a proposal for 5 sites. Of the five locations, three were dry holes, which have now been reclaimed.

The well reviewed by the team was constructed in August, 2007. Construction took about a week per site to complete. The mud pit was already dry, filled in and recontoured. The mud pit was closed earlier than typical as the drilling mud was taken and used for other wells. The area has not yet been seeded or mulched. The Condition of Approvals (COA) mention that reclaimed areas should be mulched and should have 70% of the original vegetation to be considered reclaimed.

The company installed a metal barrier around the oil well that can hold the contents of one of the tanks. The color of the oil well was chosen by bringing different colored samples on site to better match the surrounding landscape.

Table 21. IDT Evaluation of Wildhorse Wells

Resource Area	Evaluation
Fire/Fuels	The well looks good, there is a fuel break around the area
Scenery	The color is good – and the well is not visible from the highway or main road.
Water Resources	The well is in a good location. The mud pit was reclaimed last fall and the COA states that the area should be seeded and mulched (with certified weed free hay crimped in) within 6 months. The oil companies usually hire a local rancher do the seeding. The FS would require seeding again if the seed does not become established. Allowing 1 to 1½ years to begin seeding leaves the soil vulnerable to erosion for too long as the seed has to grow for another year to provide effective erosion control. With the long distances, the district has a hard time inspecting frequently enough to know if they have seeded within the specified timeframe. There is visible rill erosion, the culvert in the road to the well is almost plugged and the cattle guard is almost full – both of these structures need to be cleaned out.
Engineering	It appears the COAs about erosion control were not implemented, resulting in sediment plugging the culvert and cattle guard.
Recreation	There have been discussions over some of the oil roads remaining open to provide recreational opportunities – these will be analyzed in the TBNG Travel Management project.
Wildlife	There are concerns over field development and sharp-tailed grouse. Some leks were displaced. Grouse may not be able to sustain further development. This area has the primary sharp-tailed grouse population on the district. The existing leases will result in additional development. The district is trying to work out on site and offsite mitigation, such as decreased noise (the well operations can be heard from over a mile away on some days) and off-site habitat improvement. Also, pumper crews come to each well every day. The district could consider timing restrictions to limit disturbance.
Renewable Resources	The oil well looks good, and the metal containment fence is an improvement. The color is good. There are concerns over wildlife and wildlife habitat – fragmentation issues need to be considered when expanding the field.
Range	There is more late seral vegetation in this area than in the rest of the area. There may be a need to do some management to improve sharp-tailed grouse habitat. Possibilities include increasing stocking rates or using prescribed fire to burn 1 to 2 acre patches. The revegetation guidelines of 9 lbs/ acre of forbs may be too high a forb component and should be reconsidered.

Further Discussion: The primary concerns were over the seeding and road erosion control. The district can work with the companies on the timing of the seeding and mulching. Inspections during the road construction phase should ensure erosion control measures are in place. Erosion control and revegetation could be discussed during the pre-construction meetings. Sub-contractors should be involved in pre-construction meetings so they are aware of the conditions of approval.

Spring Creek AMP

Project Description: The Spring Creek Allotment Management Plan decision was signed in October 2007; however, the project decision had been remanded twice by the Regional Office in response to appeals. The grazing association is innovative and has

worked well with our management. The area is currently meeting grassland plan standards, but is on the low end of the late and late intermediate seral stage ranges.

There is a need to adjust the allotment to have a better mosaic across the unit rather than the current condition of having the vegetation in large areas of the same seral stage. The vegetation structure is in the middle of the prescribed ranges in the plan and so no action is needed.

Seral and structure stages are measured with Parker 3-Step and Robel pole and height measurement transects, in addition to photo points. Monitoring points are spread throughout the unit. The range staff will likely put in additional transects for more quantitative data.

Wildlife habitat appears to be good but could use more grouse lek habitat. Salt blocks could be used to increase grazing in certain areas for leks, but grouse may not choose those sites anyway.

There will be a solar pump on a trailer to move around to be able to change water source locations. This will be a useful tool but there is confusion over ownership between the grazing association and the FS.

The IDT discussed a pasture of crested wheatgrass near the highway. There are plans to burn and graze the pasture to reduce crested wheatgrass populations and increase native vegetation.

Table 22. IDT Evaluation of the Spring Creek AMP.

Resource Area	Evaluation
Fire/Fuels	Fuels would like to do some prescribed burns in this area.
Scenery	No comment on this project
Water Resources	No real water or soils concerns. The Little Powder River is on the 305b list for coliform bacteria. A survey of riparian areas along the river to document potential bacteria on NFS lands may be completed in the future. It is likely that the bacterial sources are from municipal sources upstream of NFS land.
Aquatics	No fish in the area.
Engineering	No comment on this project
Recreation	No comment on this project
Wildlife	Want to start burning for wildlife habitat, will need to look at checklist to make sure we have covered all requirements.
Renewable Resources	It would be good to put fire in the ecosystem. The project design should ensure that Standard 55 concerning sage grouse habitat is met.

Suggestions: Additional monitoring data could have been gathered but the conditions were good on the ground so the district was not concerned about the project and determined that additional data were not required..

The range Categorical Exclusion (CE) process could have been used, but then no changes could have been made to the AMP.

Weston Recreational Shooting Restriction:

Project Description: In recent years, the use of this area for recreational shooting had increased significantly, which has led to safety concerns for other recreationists and to vandalism to the toilet. Recreation in this area includes shooting, paintball, OHV, mountain biking and some hiking and is mostly used by people from the Gillette area.

The BLM put in Weston Pond, and the toilet was installed in 2004. The water for the pond comes from a well and it is pumped uphill into the pond. WGFD stocked the pond with rainbow trout and the fish condition is very good, possibly because the pond may not get much recreational fishing use. The pond was recently fenced to keep OHVs from driving close to it.

The district implemented a recreational shooting restriction in February, 2008 and did identify a nearby shooting location on BLM lands for people who had previously used the Weston area. There has been a noticeable reduction in trash since the shooting closure was enacted.

Now the district is planning on repairing the toilet and installing an informational kiosk on the west side of the highway and constructing a fence to delineate the parking area.

Since the public appears to be complying with the recreational shooting restriction, it may be possible to install a solar pump for the pond to decrease the utility costs. Previously, there was concern that a solar panel may have been destroyed by being used as a shooting target. The original plan was not to continue paying for the electricity costs but to get a local agency or other partner to take over.

This area can be a high OHV use area with five to 50 parties daily in the spring and fall. Some riders are using the creek as a trail, but it is very difficult to catch them in order to give them citations for resource damage. The recreational shooting restriction could expand recreational use by families in this area.

Recommendations: Continue monitoring the effectiveness of the order, as well as continue coordination with the BLM.

Figure 11. Badger on TBNG.

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Literature Cited

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Photographs are from USFS personnel unless otherwise noted.

Acronyms

AMP	Allotment Managment Plan
ATV	All Terrain Vehicle
AUM	Animal Unit Months
BLM	Bureau of Land Management
BMPs	Best Management Practices
CE	Categorical Exclusion
COA	Conditions of Approval
DM	Decision Memo
DM&E	Dakota, Minnesota, and Eastern Railroad Corporation
DN	Decision Notice
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FPO	Forest Protection Officer
FY	Fiscal Year
GA	Geographic Area
IDT	Interdisciplinary Team
LRMP	Land and Resource Management Plan
MA	Management Area
MIS	Management Indicator Species
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NFS	National Forest System
NGP	Northern Grasslands Plan
NRHP	National Register of Historic Properties
OHV	Off-Highway Vehicle
PREcorp	Powder River Energy Corporation
PSD	Prevention of Significant Deterioration
R2	Region 2 (Rocky Mountain Region of USFS)
RNA	Research Natural Area
ROD	Record of Decision
SHPO	State Historic Preservation Officer
SIA	Special Interest Area
SOPA	Schedule of Proposed Actions
SUP	Special Use Permit
TCP	Traditional Cultural Properties
T&E	Threatened and Endangered Species
TBNG	Thunder Basin National Grassland
THPO	Tribal Historic Preservation Officer
USDA	United States Dept. of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WGFD	Wyoming Game and Fish Division
WYDEQ	Wyoming Department of Environmental Quality
WYNDD	Wyoming Natural Heritage Database
WYSEO	Wyoming State Engineer's Office

Appendix 1. Goals and Objectives

This section gives progress made toward the objectives which are due annually or by Fiscal Year 2008. Progress updates as of FY07 toward all grassland-wide and geographic objectives in the Grassland Plan were given in Appendix 2 of the TBNG Five Year Review, which is posted on the forest website at: http://www.fs.fed.us/r2/mbr/projects/forestmonitoring/index.shtml.

Goal 1: Ensure Sustainable Ecosystems: Promote ecosystem health and conservation using a collaborative approach to sustain the Nations forests, grasslands and watersheds.	
Objective 5. Throughout the life of the Plan, ensure proper plugging of abandoned wells to prevent cross contamination of aquifers (e.g., seismograph holes, water wells, etc.).	**Year Due Annually**
See the Watershed 4 – Aquifer Protection Monitoring Item.	
Goal 1.b: Provide ecological conditions to sustain viable populations of native and desired non-native species and to achieve objectives for Management Indicator Species (MIS).	
Objective 1. As scientific information becomes available, jointly develop with the US Fish and Wildlife Service and other agencies conservation and recovery strategies for plant and animal species, listed as threatened or endangered under the Endangered Species Act, and implement established conservation or recovery strategies over the life of the Plan.	**Year Due Annually**
See the T & E 1 - Black Footed Ferret Monitoring Item. Ute Ladies' Tresses (Spiranthes diluvialis), a plant T&E species with potential to be found on the TBNG has a draft conservation/recovery plan. In addition there is a petition to delist this species.	
Objective 3. Develop and implement conservation strategies for Forest Service sensitive species, as technical information becomes available	**Year Due Annually**
Plants: Conservation assessments were published for all US Forest Service Region 2 sensitive plant species known or suspected to occur on the TBNG (available at: http://www.fs.fed.us/r2/projects/scp/assessments/index.shtml). Conservation strategies specific to the TBNG have not been developed at this time. There is no documentation that any project actions at this time will lead to a trend towards federal listing for any of these species, so it appears that adhering to project level analysis will conserve these species on the TBNG in the near future. Aquatic Species:	

No conservation strategies exist for R2 aquatic sensitive species in the planning area, although aquatic assessments have been constructed for these species. It will take time, personnel, and money to accomplish the prerequisite inventories to construct conservation strategies. Aquatic personnel have accomplished very limited inventories in the planning area as of FY05 due to existing workload priorities.

Objective 5. Identify rare plant and animal communities, inventory them, and develop associated management strategies to conserve them. Support the development and implementation of State and Regional Conservation Plans as they apply to the grassland or forest units. **Year Due Annually**

Aquatic Species:

Although the sturgeon chub and other aquatic sensitive species are considered locally rare in the planning area, there were no ad hoc inventories or management strategies developed to conserve them up to FY05 due to staffing, budget, and other workload priorities. Selected baseline inventories were conducted from 2002 through 2006, no surveys were conducted in 2007-2008. The WG&F has not developed a specific conservation strategy for either the sturgeon chub or other sensitive, aquatic species extant in the planning area.

Plants:

Projects that influence more than insignificant amounts of vegetation include inventory and analysis for rare plant communities. There is no documentation that any project actions will lead to a disturbance or change to rare plant communities that would reduce their continued presence on the TBNG, so adhering to project level analysis will conserve these plant communities on the TBNG in the near future. There is no documentation of trends (positive or negative) in habitat availability and quality, or any other applicable factors for rare plant communities. There have not been any proposals for State and Regional Conservation Plans that applied to the rare plant communities of the TBNG.

Objective 7. Establish scientifically credible monitoring programs, develop survey methods, and initiate baseline and trend surveys for populations, habitats and/or ecological conditions to contribute to viability of threatened and endangered species, species at risk, and MIS. **Year Due Annually**

Plants:

Based on USFWS published survey protocol, suitable, unoccupied habitat for Ute Ladies' tresses has been identified in project level surveys. As needed and as possible, projects have been modified to avoid or minimize effects to this habitat.

Several occurrence of Barr's milkvetch have been visually monitored over at least 3 years. While visual observations are not conclusive, occurrences appear to respond to available moisture and no consistent downward trend has been noted. Additional occurrences have been noted in recent years. Other R2 sensitive species are either in the process of identification confirmation or location confirmation at this time.

Plant species that are at risk but not covered by Threatened, Endangered and Sensitive Species (TES) direction have been identified as plant species of local concern and habitat described. These plant species of local concern are included in botanical target surveys at the project level. Survey protocol is based on national direction for TES plant species and scientific protocols. Protocols are available at: http://www.warnercnr.colostate.edu/frws/research/rc/tesintro.htm [06/05/06].

Objective 8. Complete and initiate implementation of conservations strategies for globally rare plant species (G2-3 rankings) including Barr's milkvetch and other high priority species in cooperation with other conservation agencies and organizations.	**Year Due Annually**

Barr's milkvetch is no longer tracked by WYNDD because surveys documented a sufficient level of abundance. Smooth goosefoot (*Chenopodium subglabrum*), a globally rare species (G3) documented to occur on the TBNG has been added to the plant species of local concern list and as such is included in botany surveys and project level analysis.

Objective 9. Conduct target surveys for globally rare plant species (Barr's milkvetch, smooth goosefoot, Ute ladies' tresses) and other rare plant species with viability concerns.	**Year Due Annually**

Target surveys are currently conducted as part of project level analysis for Barr's milkvetch and smooth goosefoot based on habitat and phenology (timing of flowering). As part of recent allotment management plan analysis, target surveys within appropriate habitat were conducted over 505,876 acres.

Goal 1.c: Increase the amount of forests and grasslands restored to or maintained in a healthy condition with reduced risk and damage from fires, insects and diseases, and invasive species.

Objective 3. Within 5 years, develop and implement cooperative noxious weeds and undesirable non-native or invasive species management plans in consultation with appropriate partners and agencies	**Year Due 2007**

An Invasive Species Strategy was developed in 2005 for all of the Thunder Basin National Grassland for terrestrial and aquatic species as well as for invasive plants. An analysis for an Integrated Management approach to the control of noxious weeds was completed for the entire area in 1996, and in Implementation Plan for that effort was completed in 2000. Cooperative Agreements are in place with Campbell, Converse, Niobrara, and Weston counties for control of noxious weeds on the Grasslands. Thunder Basin, Inyan Kara, and Spring Creek Grazing Associations cooperate physically and financially with the Forest Service and those counties in weed control. Thunder Basin Grassland Prairie Ecosystem Association has also contributed financially in the inventory and control of weeds on federal, state, and private lands in the Grasslands.	
Objective 4. Within 3 years, develop and implement a certified noxious weed-free forage program in consultation with appropriate state agencies	**Year Due 2005**
A certified weed-free forage program has been in place for all National Forest System lands in the state of Wyoming since 1995. The existing Closure was strengthened in 2005 to include products such as hay cubes and pelleted forage products.	
Objective 7. Immediately initiate hazardous material cleanup on identified sites	**Year Due Annually**
All previously identified hazardous material sites have been cleaned up. Hazardous material spills associated with on-going minerals operations are administered through the minerals permits.	
Objective 8. In a timely manner, review Prevention of Significant Deterioration (PSD) permit applications, and make recommendations where needed to reduce impacts to air quality related values for all Class I and Class II areas.	**Year Due Annually**
There have been no known PSD permits for review.	

Goal 2: Multiple Benefits to People: Provide a variety of uses, values, products, and services for present and future generations by managing within the capability of sustainable ecosystems.	
Goal 2.a: Improve the capability of the Nation's forests and grasslands to provide diverse, high-quality outdoor recreation opportunities.	
Objective 1. Annually maintain or reconstruct 20% of National Grassland to regional standards.	**Year Due Annually**

See the Recreation 1 – Trails Monitoring Item.	
Objective 3. ***Within 5 years, provide appropriate directional signing to key recreation sites and inform people about the public access routes to national grasslands and national forests***.	**Year Due 2007**
Beginning in FY07, a large emphasis has been placed on installing repaired, corrected and new directional signing on the grassland. Plans are underway to continue this effort into the future as funding allows. The FY07 emphasis was very successful with a noticeable increase in legible signs throughout the grassland. Hunters in particular, as well as landowners, have made positive comments on the higher quality and quantity of signs. Recommendations: • Maintain funding levels to allow hiring of a sign crew and to purchase supplies to continue this effort. • Place U.S. flag stickers on all signs to prevent vandalism and reduce replacement costs.	
Objective 5. ***Within 5 years, draft and begin implementing a science and marketing based interpretive program strategy that uses a variety of communication media. The purpose of the strategy will be to effectively use communication principles and methods based in the field of interpretation to "Communicate with target audiences regarding management concerns or issues, changes in management direction, and specific projects". Enhance visitor's recreation experiences by identifying and implementing interpretive projects that highlight national grassland and forest resources and management.***	**Year Due 2007**
Thunder Basin National Grassland was included in the forest interpretive plan which was updated and finalized in 2005. Grant money was secured from the Wyoming State Trails program in FY08 to create a "media blitz" for the Campbell County population. The message will be "responsible riding on national forests and grasslands" to discourage off-road use by ATV riders. This effort is in partnership with the Bighorn National Forest, Black Hills National Forest, and the Buffalo Field Office BLM, as all of these areas, as well as the grassland, are greatly affected by Campbell County recreation users. The message/s will be conveyed through print and radio media. Recommendations: • Identify similar message needs as warranted. • Use 2008 media program as a pilot and adjust for use in other communities as needed.	

Objective 6. Provide nonmotorized and motorized trails for a wide variety of uses and experiences.	**Year Due Annually**
The Thunder Basin Travel Management Decision should address the need for motorized trails. Budgets have been too prohibitive to create any plans for a non-motorized trail system.	
Objective 7. Manage trail systems to minimize conflicts among users.	**Year Due Annually**
The Thunder Basin Travel Management Analysis should identify conflicts by type, user groups, and geographical locations.	
Objective 8. When appropriate, authorize special use permits for outfitter-guide services on NFS lands.	**Year Due Annually**
Outfitter and guide permits are regularly authorized.	
Objective 9. Through partnerships, encourage, establish, and sustain a diverse range of recreational facilities and services on NFS lands. Encourage outfitters and guides who support interpretive and educational awareness of grassland ecosystems or who provide services to people with disabilities.	**Year Due Annually**
Outfitters are encouraged to provide educational and interpretive awareness in their programs.	
Objective 10. When appropriate, designate, and manage outfitted camp locations.	**Year Due Annually**
There are no outfitter camps on the Grassland.	
Goal 2.b: Improve the capability of wilderness and protected areas to sustain a desired range of benefits and values.	
Wilderness Objective*:*	
Objective 1. Within 5 years of Congressional designation, revise or develop wilderness plans to emphasize recreational, aesthetic, and educational experiences consistent with values of those areas.	**Year Due 2008**
There are currently no designated Wilderness Areas on the Grassland.	
Heritage Sites Objectives:	

Objective 1. Within 5 years, develop and implement a heritage inventory strategy and implementation schedule to survey and evaluate sites, in support of management actions and activities as agreed upon with the State Historic Preservation Offices (SHPO), Tribal Historic Preservation Offices (THPO) and to include compliance with laws Sec. 106 and Sec. 110 of the National Historic Preservation Act.	**Year Due 2007**
Currently the Forest is in the final stages of a comprehensive Programmatic Agreement for many aspects of the National Historic Preservation Act, especially under section 106. Otherwise the schedule to survey and evaluate sites under Sec. 110, outside of projects, is extremely limited due to the annual allocation of heritage funds to the Grassland - less than $10,000 per year – and that amount is also for section 110 compliance on the Laramie Peak Unit of the Medicine Bow-Routt NF. At the current time, our strategy is to use projects to record sites and inventory acres. This strategy does yield several thousand acres of inventory and recording of between 80 and 100 sites each year. Section 110 inventory has occurred with NFS and partner funds, but tends to be accrued over ten year periods, rather than occurring each year.	
Objective 2. Within 5 years, assess identified sites eligible for the National Register of Historic Places (NRHP) in conjunction with SHPO and THPO and provide interpretation for National Register of Historic Places sites where appropriate and consistent with developed preservation plans.	**Year Due 2007**
No sites on TBNG are currently listed on the National Register of Historic Places. We currently have a draft nomination for the Dorr Place, an historic homestead and ranch headquarters. If placed on the NRHP a plan will be developed for the site in consultation with the SHPO. At this time, we prefer off-site interpretation for most sites since we cannot maintain new developments due to limited budgets and do not want to attract vandalism and theft.	
Objective 3. Within 3 years, identify and protect traditional cultural properties in consultation with federally recognized American Indian tribes	**Year Due 2005**
Two Traditional Cultural Properties (TCP) have been identified on TBNG and are under protection with Plan standards and guidelines as well as other legal protections. One TCP lies only partially in a Special Interest Area (SIA) and it is recommended the SIA boundary be expanded to include the entire TCP. Many tribes have concerns about identifying TCPs to federal agencies unless the sites are threatened by a project and have told us they will share the information only as needed. We continue to work to develop and maintain relations with tribes to aid in the identification and protection of TCPs, although most of this relationship building comes in the form of project consultation. The Grassland has participated in a Department of Defense Legacy project called “after the smoke clears” on protecting TCPs and sacred sites during and after fire suppression on Grasslands.	
Objective 5. Educate, interpret, and promote partnerships to increase public awareness, protect heritage resources, and further the goals of research.	**Year Due Annually**

Information from treatments on TBNG has been made available for Forest partners at regional archaeological and anthropological conferences. The Grassland unit has conducted volunteer projects during the period to help record and protect historic properties and increase public involvement. The unit has worked with and presented to some local historic societies and museums to protect sites and enhance local understanding of area history. Forest Service living history has been presented to thousands of school children via outdoor education expos in Gillette and Casper. Project work that impacts cultural resources as well as cultural resource inventory has been used to further the goals of research and interpret the archaeological record of the Grassland. One grassland partner was awarded the 2007 National Grasslands' Grassland Research and Technology Award. The Grassland has provided internships for MA candidates at the University of Wyoming to aid in our partnering expertise and experience with the University.	
Special Areas Objective:	
Objective 1. Within 5 years, develop and implement a management and monitoring plan for each Research Natural Area.	**Year Due 2007**
There are no establishment reports currently completed for any of the Research Natural Areas (RNAs). There were several grazing analysis projects that will continue livestock grazing within the RNAs. Livestock grazing in the RNAs is not excluded by the LRMP because the ecological communities represented by these RNAs were in part created by large grazing animals.	
Goal 2.c: Improve the capability of the Nation's forests and grasslands to provide a desired sustainable level of uses, values, products, and services. :	
Livestock Grazing Objectives	
Objective 1. Annually, provide forage for livestock on suitable rangelands. Annual grazing levels will be adjusted, as needed, during periods of drought or for other conditions	**Year Due Annually**
Consistently, and historically, grazing levels are adjusted annually according to local climatic conditions as well as any other factors that may be affecting vegetative production. Discussion of conditions during the life of this Plan is included in the Comparison of Estimated and Actual Outputs and Services Monitoring Item.	
Objective 2. As needed, revise allotment management plans (AMP) to meet desired vegetative conditions described in Geographic Areas and to implement all appropriate management plan direction	**Year Due Annually**

	The allotment management EA for the Spring Creek Unit was completed in 2005; following appeal, and partial remand, the decision was completed in late 2007. The decision has been implemented on all 15 allotments, although AMPs have not yet been updated, as needed. Few updates will be required as existing conditions are almost totally meeting desired conditions across the area. The allotment management decision for the 71 allotments in the Thunder Basin Grazing Association EIS was issued in October 2007. The decision was upheld on appeal in March 2008. The AMPs have yet to be updated, but adaptive management is already being implemented. The Decision Memo for 18 allotments in the Inyan Kara Grazing Association planning area was signed in September 2007. By definition, using the 2005 legislative categorical exclusion authority means that existing management is meeting or moving toward desired conditions, and current management will be continued. No AMPs have been updated for these allotments at this time, and there are few anticipated changes. The EIS for the remaining 77 allotments in the Inyan Kara area was completed in September 2008. Field analysis for these allotments was completed in 2007, and the results are included in this report regarding rangeland vegetation structure and seral stage. Thus, allotment management planning will have been completed and updated for all 552,480 acres of the Grassland within the next six months. As data in the above tables show, most areas of the Grassland as a whole are already meeting desired conditions.
	Mineral and Energy Resources Objectives:
	Objective 1. Ensure reclamation provisions of operating plans are completed to standard. **Year Due Annually**
	Inspections are completed and formal approval is sent to the WYDEQ by the Forest Service. All provisions are completed before reclamation bonds are released.
	Objective 2. Honor all valid existing legal mineral rights, **Year Due Annually**
	Operating Plans are addressed annually. New proposals are addressed through the National Environmental Policy Act (NEPA) process. Mitigations necessary to ameliorate concerns are included in Special Use Permits and Plans of Operations.
	Miscellaneous Products Objective:

Objective 1. Provide appropriate opportunities to satisfy demand for miscellaneous products (special forest and grassland products, such as mushrooms, floral products and medicinal plants) through environmentally responsible harvest and collection methods on National Forest System Lands.	**Year Due Annually**
Proposals for collection of special forest products are analyzed for effects on sustainability of populations and collection methods. Where conditions are met, permits for collection are issued.	
Scenery Objective:	
Objective 1. Implement practices that will meet, or move the landscape character toward scenic integrity objectives. Reference Geographic Area direction.	**Year Due Annually**
Standard Lease Terms (SLT) provide guidance on color requirement for oil and gas facilities on TBNG to blend with the surrounding grassland landscape and meet and maintain the adopted scenic integrity objective and the desired landscape character. CSU stipulations for areas with High and Moderate Scenic Integrity Objectives (SIOs) provide guidance on meeting and maintaining the adopted scenic integrity objective and the desired landscape character. Coal companies are required to reclaim mined lands to meet and maintain the adopted scenic integrity objective and the desired landscape character.	
Special Uses Objective:	
Objective 1. Ensure all special use permits are meeting requirements for customer service and are in compliance with the terms of their permits or contracts.	**Year Due Annually**
Customer service requirements will continue to be met through the cost recovery process. The grassland meets or exceeds its' target for "Administered to standard". Several "Notice of Non-Compliance With Opportunity To Cure" letters were issued and compliance was obtained.	
Goal 3: Scientific and Technical Assistance Develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability.	
Goal 3.a: Improve the knowledge base provided through research, inventory, and monitoring to enhance scientific understanding of ecosystems, including humans, to support decision making and sustainable management of the Nation's forests and grasslands.	
Objective 1. Implement inventory and monitoring systems to provide scientific information and decision support across all land ownerships.	**Year Due Annually**

Four Ecological Classification Types developed by rangeland research scientist Dr. Daniel Uresk of the Forestry Sciences Laboratory at Rapid City, South Dakota were used in the Cover-Frequency transects installed across the Grassland to gather and evaluate data for species composition (seral stages). Methods and results were used to support allotment management decisions and assure sustainable management of the rangelands. Results are applicable for all land ownerships across the grassland landscape. The Grassland collaborated with The Nature Conservancy, an adjacent landowner with conservation goals; and coordinated with BLM and USFWS level 1 team on survey strategies, flowering timing and determinations for Ute Ladies' tresses.	
Objective 2. ***Provide research results and tools through technology transfer to support effective management, protection, and restoration of ecosystems.***	**Year Due Annually**
Between 2004 and 2007, five conservation assessments have been completed for the following TBNG fish and amphibian species: plains killifish, flathead chub, plains minnow, and northern leopard frog.	
Objective 3. ***Assess potential habitat capability at the local level for management indicator species by identifying existing or establishing new reference areas and implementing long-term monitoring. Some reference areas will need to be managed for multiple-year accumulation of vegetation and litter for those management indicator species of high structure grasslands and sagebrush habitats.***	**Year Due Annually**
The Grassland needs to evaluate whether the habitat capability and suitability models are the most effective measure of habitat quality for MIS species or if another protocol should be used. Habitat quality for MIS will be assessed for the next 5 year evaluation.	
Objective 4. ***Assess the potential impacts of the construction of impoundments in upper watersheds on hydrologic flows and patterns on downstream habitat on the sturgeon chub and other sensitive native fish species.***	**Year Due Annually**
Because of budget, time, personnel, and other workload priorities, there have been no systematic efforts to make this determination in recent years.	
Objective 5. ***Assess the condition of watersheds containing aquatic habitats of sensitive fish species that are found primarily in clear-water streams and rivers.***	**Year Due Annually**
There are no aquatic sensitive species extant in the planning area that primarily prefer clear-water streams. This objective may not be applicable to the TBNG.	

Goal 4: Effective Public Service. Ensure the acquisition and use of an appropriate corporate infrastructure to enable the efficient delivery of a variety of uses.	
4.a: Improve the safety and economy of the USDA Forest Service roads, trails, facilities, and operations and provide greater security for the public and employees	
Objective 1. Within 5 years, identify travel opportunities and restrictions, including designating motorized travel-ways and areas, to meet land management objectives. Provide reasonable access for use of the national grasslands and national forests.	**Year Due 2007**
Travel management planning for the Grassland began in 2007, with an expected completion in 2009 with the publication of map designating motorized travel opportunities.	
Objective 2. Within 5 years, provide site-specific maps and information showing closures, restrictions, and opportunities for motorized and non-motorized use using a science-based Roads Analysis process.	**Year Due 2007**
The 2004 Roads Analysis for the Grassland is being used as the starting point for the travel analysis planning. Publication of the Motor Vehicle Use Map in 2009 will show site-specific motorized travel opportunities.	
Objective 3. Within 5 years, identify the minimum Forest Service road system for administration, utilization, and protection of National Forest system lands and resources, while providing safe and efficient travel and minimizing adverse environmental effects	**Year Due 2007**
The Thunder Basin Roads Analysis was completed in 2004 providing a framework for motorized uses on the Grasslands. Recommendations for a minimum road system will be implemented in project level decisions.	
Objective 4. Where appropriate, encourage and authorize recreation opportunities for people with disabilities.	**Year Due Annually**
All newly constructed and reconstructed facilities will be accessible to the extent possible within physical constraints.	
Goal 4.b: Provide appropriate access to NFS lands and USDA Forest Service programs.	
Land Ownership and Access Objectives:	
Objective 1. Within 3 years, develop and implement approved land ownership adjustment plan in response to resource management and public needs. The plan shall be coordinated, reviewed, and updated annually.	**Year Due 2005**

A landownership adjustment plan has not proven to be the best tool due to the existing pipeline of projects and the political nature of land exchanges. The pipeline of projects is addressed each year and priorities are set in conjunction with resource management needs and budget. The current pipeline of projects exceeds five years of projects.	
Objective 2. Within 3 years, develop and implement a 5-year Rights-of-Way Acquisition Program in response to resource management programs and access needs. This 5-year plan will be coordinated, reviewed, and updated annually.	**Year Due 2005**
A Rights of Way Acquisition plan will be developed over the next several years as a necessary byproduct of implementing the Travel Management Decision. Priority projects have been identified.	
Unauthorized Uses Objective:	
Objective 1. Take appropriate law enforcement or administrative actions on all unauthorized uses.	**Year Due Annually**
All discovered or reported unauthorized use is investigated. Where appropriate, law enforcement action is taken.	
Public and Organizational Relations Objectives:	
Objective 1. Provide opportunities for federally recognized American Indian tribes to participate in planning and management of the national grasslands and national forests, especially where tribes have claimed special geographic, historical, or cultural interest.	**Year Due Annually**
Federally recognized Tribes that have evinced interest are regularly scoped for projects and plan revisions. These tribes are in Wyoming, Oklahoma, South Dakota, North Dakota, and Montana. Tribes with Tribal Historic Preservation Officers regularly comment on project and site protection. Site visits have been made with tribes and treatment plans reviewed by Tribal Historic Preservation offices and tribes are regularly invited to participate, although with the long distances involved it is difficult for many tribes to get to the Grassland. These tribes will be on mailing lists for Forest Plan revisions.	
Objective 2. Work in cooperation with federal, state, and county agencies, individuals, and nongovernment organizations for control of noxious weeds and invasive species and animal damage.	**Year Due Annually**
See Community Relations 1 Monitoring Item	
Objective 3. Create and foster partnerships with other agencies, accredited educational and research institutions, and other appropriate public and private sector organizations to further the goals of research, education, protection, and interpretation.	**Year Due Annually**

A Challenge Cost Share Agreement was developed with Wyoming Natural Heritage Database (WYNDD) in 2002 which has and continues to contribute to research, education, protection, and interpretation - specifically for Barrs Milkvetch and Ute's lady's Tresses Orchid. The Botany Program is working with other partners to develop sources of local native plant materials which are genetically appropriate for use on Thunder Basin National Grassland.	
Objective 4. Cooperate with the appropriate state and federal agencies in balancing desired wildlife and fish population objectives with desired habitat conditions.	**Year Due Annually**
On a regular basis we meet with the Wyoming Game and Fish Department to discuss and review their population goals and objectives. The District develops habitat improvement projects to meet the population goals set by the Wyoming Game and Fish Department	
Objective 5. Identify opportunities for partnerships to provide new recreational fisheries and/or waterfowl and wetlands habitat.	**Year Due Annually**
The DM&E decision identified the creation of wetlands as part of mitigation. The location has been selected and is currently being analyzed for site specific effects.	