



# **MONITORING AND EVALUATION REPORT**

**FY 2006**

Bighorn National Forest  
Region 2



United States  
Department of Agriculture

Forest Service  
Sheridan, Wyoming





## **CERTIFICATION**

I have reviewed the Annual Monitoring and Evaluation Report for the Bighorn National Forest for fiscal year 2006. The Revised Forest Plan went into effect in December 2005, with entirely new monitoring items and protocols. The monitoring and evaluation section of the Revised Plan is based on findings and recommendations made in previous monitoring and evaluation reports and on the interdisciplinary team, cooperating agency, and public input. It incorporates current procedures, protocols, and the best available science.

I am especially proud of the work accomplishments reported here. Despite budget constraints and shifting priorities, we, along with our cooperators and volunteers, accomplished a great deal of project work on the ground, where it ultimately counts.

*/s/ William T. Bass*

William T. Bass  
Forest Supervisor

*06/18/2007*

Date

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## INTRODUCTION

An annual Monitoring and Evaluation Report is to be prepared for each forest plan. Funds are provided for the preparation of the report based on information and data collected under agency direction. A target of one report has been assigned to each Forest.

The Monitoring and Evaluation Report displays the results of monitoring and provides the Forest Supervisor and the public with information on the progress being made toward achieving the goals, objectives, and management requirements in the forest plan. It also indicates how well we are fulfilling public demand for goods and services while protecting the Forest resources.

The forest plans established direction and process so all future decisions include an interdisciplinary approach to achieve integrated resource management. The plans provide direction to coordinate multiple uses on the Bighorn National Forest on a sustained basis. They also fulfill legislative requirements and address local, regional, and national issues. Chapter 4 of both plans requires monitoring and evaluation of management activities to determine the following:

- ◆ How well forest plan objectives have been met.
- ◆ Consistency of activities with standards and guidelines contained in the forest plan.
- ◆ The need for amendment or revision.

## Background

Monitoring is the quality control aspect of forest planning; it requires data collection and observations of activities to periodically evaluate the planning process and the forest plan. Evaluation is the analysis and interpretation of monitoring results. It addresses the goals, objectives, long-term relationships, management direction, and significant management activities occurring. There are four aspects to monitoring and evaluation:

- ◆ **Implementation Monitoring** – Forest personnel conduct monitoring as part of their routine assignments and management responsibilities. Their results are documented in project files. Monitoring is performed to determine if management activities are designed and carried out in compliance with forest plan direction and management requirements.
- ◆ **Effectiveness Monitoring** – this type of monitoring determines if management activities are effective in driving the Forest toward the desired future condition described for the various management areas.

- ◆ **Validation Monitoring** – this type of monitoring determines whether the initial data, assumptions, and coefficients used in development of the Forest Plan were correct or if there is a better way to meet goals and objectives and achieve the desired future condition.
- ◆ **Evaluation and Conclusions** – the purpose of evaluation is to interpret monitoring results and reach some conclusions about what the monitoring results really mean with regard to Forest Plan implementation. The interdisciplinary team (ID Team) may make recommendations and identify research needs as a result of the evaluation process.

## **Five-Year Monitoring Requirements**

Every five years monitoring is to be evaluated to determine if the Forest Plan needs to be revised. FY 2006 is the first year of implementation for the Revised Forest Plan. Specific items that would indicate a future revisions:

- ◆ Changes in public demand.
- ◆ Changes in condition of the land or resource used to conduct the analysis, catastrophic events, or monitoring results.
- ◆ National Forest Management Act requirement to update every 15 years.

## **Achieving Objectives of the Forest Plan**

Outputs often vary substantially from year to year as funding levels change. The trends in various resource areas over a three- to five-year period are a better reflection of whether the Forest Service is progressing toward accomplishment of its goals and objectives to reach the desired future condition. A more detailed discussion is contained in the narratives for individual resource areas.

The single factor that has the most influence on outputs and program effectiveness is the annual budget. Distribution of funds often reflects national direction and priorities of the administration and Congress. Traditionally, we have been funded at a level significantly below what was projected to implement the 1985 forest plan. Moreover, the dollars are usually not adequately distributed to meet the needs for individual program areas. While budget trends and projections were considered in revising the Forest Plan, our assumptions were:

- ◆ In general, funding will be flat, or at best, keep up with inflation.
- ◆ Priorities and budgets will change, so specific output levels projected in the Revised Plan may or may not be achieved.
- ◆ The Revised Plan was developed under the principles of adaptive management. As budgets and priorities change, and we learn new science and best management practices, the Bighorn National Forest outputs will change over time. The monitoring and evaluation report will be one mechanism of informing people about actual accomplishments.

For the past several years, we have been using a system of project budgeting, often referred to as a “unified budget.” Employees plan this budget and execute projects on a Forestwide basis and trade-offs are realized at the beginning of the fiscal year. Under this system, our goal is to “cap” our fixed costs (permanent employees’ salaries, vehicles, rent and utilities, etc.) at 70% of the

annual budget. The remaining 30% of the annual budget is to be used to provide flexibility to fund a seasonal workforce, provide training, purchase equipment, and deal with unplanned events. Currently our fixed costs are closer to 80% of the annual budget. At present, we have little control over budget planning and distribution at this organizational level.

### **Monitoring Results for 2006**

The following table takes the monitoring items from Chapter 4 of the 2005 Forest Plan and lists them by the resource areas to which they apply. The effectiveness, implementation, and validation monitoring items are described for each resource. In doing this, the numbering system that was derived for the Forest Plan is out of sequence.

## MONITORING RESULTS

Monitoring Driver	Monitoring Question	Potential Monitoring Items	General Discussion
<b>Implementation Monitoring – Are projects being implemented according to Forest Plan direction?</b>			
1. NFMA; Multiple Goals, Objectives, Strategies	Are projects being implemented according to Revised Plan direction? This includes both planned actions and actual implementation.	Select at least one NEPA project, and conduct a thorough review of all resource areas to see if Revised Plan strategies, management prescription desired conditions, standards, and guidelines were followed and if the treatment/project was effective to improve land management.	Annual monitoring Aquatics Program specialists conducted a BMP review on the Bald Mountain timber sale. The review was satisfactory, with some minor issues related to soil disturbance. Steering Committee reviewed the Bench project on an August 2006 field trip. Aquatics program completed a Best Management Practices (BMP) review of this project, which incorporates Forest Plan standards and guides.
Notes: Priority projects include: prescribed fire, timber harvest, travel management and dispersed recreation, and livestock grazing (these are major revision or implementation topics).			
2. Objective 2a, Strategy 8 Objective 4c, Strategy 4	How well is the Forest interacting and planning in cooperation with communities and local governments?	Narrative summary of grants and agreements; meetings and coordination efforts with local governments and communities. Narrative summary of pre-project collaborative planning. Narrative summary of bi-annual monitoring meetings.	Annual monitoring The Forest maintained various agreements with other federal state and local government agencies, as well as private interest groups and volunteers. See Appendix A for a complete description of these coordination efforts.
3. Objective 2b	Are Wild and Scenic River candidate waters being managed for the desired conditions?	Monitor the outstandingly remarkable values from the suitability/eligibility analysis.	Monitor every five years; due in 2010 and 2015 The Tongue and Littlehorn rivers retained their status in the 2005 revised Forest Plan as recommended Wild and Scenic Rivers.



Monitoring Driver	Monitoring Question	Potential Monitoring Items	General Discussion
4. Objective 3a	Is the Bighorn National Forest assisting in building the capacity of Tribal governments, rural communities and private landowners to adapt to economic, environmental, and social change related to natural resources.	1. Summary of financial and technical assistance provided to local communities and natural resource based businesses to pursue self-sufficiency and sustainability.	Annual monitoring 2 agreements maintained (see Appendix A).
		2. Summary of Bighorn National Forest enhancement of communities' capacities to reduce wildfire risk.	Annual monitoring The Forest participated in meetings, with committees, and jointly implemented fuels reduction projects (see Appendix A).

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Aquatics Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
5. Objective 1a Strategy 1	Is water quality on the Forest being maintained according to state water quality standards?	1. Coordinate with Wyoming Department of Environmental Quality and other stakeholders, to develop a water quality monitoring plan for streams identified in the 305(b) Report and 303(d) List of Impaired Streams.	Annual monitoring Water quality samples were collected on the North Tongue River and Granite Creek. These are the only streams on the Forest identified in the 305(b) report. Water quality standards for indicator bacteria were exceeded in the North Tongue River during the months of July, August, and September of 2006. Bacteria samples collected in Granite Creek are collected monthly and conclusions cannot be made about exceedences of water quality standards.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Aquatics Discussion
5. Objective 1a Strategy 1, cont.		2. Identify potential sites for long-term water quality monitoring. Monitoring items might include, but are not limited to, temperature, dissolved oxygen, pH, microorganism or benthic macroinvertebrates for refinement of regional databases.	Monitor every five years; due in 2010 and 2015.
6. Objective 1a Strategy 2	Were watershed improvement projects completed?	Summarize number and type of watershed improvement projects. Identify what percentage of the watershed or length of stream reach has been treated.	Annual monitoring 1) Approximately 2 miles of the Shutt's Flat Trail were relocated and 1.4 miles of trail were abandoned within the South Tongue River watershed. 2) The Paintrock watershed improvement project relocated 1.5 miles of trail and abandoned 1.2 miles of trail in the Middle Paintrock Watershed.
7. Objective 1a Strategy 3	Are disturbed sites being restored using the appropriate vegetation?	Number of disturbed sites restored after consulting the Bighorn NF Revegetation Guidebook.	Monitor every five years; due 2010, 2015.
8. Objective 1a Strategies 4 – 7	Are aquatic habitat conditions being maintained for native plant, invertebrate and vertebrate riparian-dependent species?	1. Summarize results of long-term, reach-level monitoring sites, including riparian vegetation.	Monitor every five years; due 2010, 2015.
		2. Summarize results of habitat improvement projects (acres/miles) by watershed.	Monitor annually. No specific habitat improvement projects were implemented.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Aquatics Discussion
<b>Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?</b>			
40. Objective 1a, Strategy 1	Are Best Management Practices (BMPs) effective in meeting water quality standards?	Conduct long-term best management practice effectiveness studies according to study plans for specific BMPs coordinated across the forest.	Monitor annually 1) BMP audits were conducted on the Bald Mountain and Riley Point timber sales. It appears that the interdisciplinary process in the project development was effective in protecting water quality standards. 2) Some BMPs for livestock grazing were implemented in the upper North Tongue River drainage, but have not been effective in reducing bacterial levels below the accepted water quality standard defined by the State of Wyoming.
Notes: Examples include: stability and effectiveness of stream buffers, road drainage structure operations and maintenance, soil disturbance and downstream aquatic habitat effects in harvested versus non-harvested areas, effectiveness of stream protection to minimize sediment delivery to fish streams. Annual status reports to be completed.			

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Aquatics, Riparian, Fisheries Discussion
<b>Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?</b>			
43. Objective 1a, Strategy 4	Are fisheries and riparian standards and guidelines effective in maintaining or improving fish habitat or do they need revised?	Survey a representative sample of fish bearing streams in or adjacent to management activities (e.g., transportation networks and associated stream crossings, range allotments, timber sales, or recreational sites) occurring within the last year.	Monitor annually and every five years (5-year monitoring due in 2015). There is no indication that fisheries and riparian standards and guidelines are not effective in maintaining or improving aquatic habitats.
Notes: Habitat components important for fish include large woody debris, pool depth, frequency, percent pool area, and stream width-depth ratio.			

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wildlife Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
9. NFMA Species Viability Objective 1b Strategies 1 – 5	Is the Bighorn National Forest providing the ecological conditions to sustain viable populations of native and desired non-native species and to achieve objectives for Management Indicator Species (MIS)?	1. Number of Conservation Strategies developed or implemented.	<p>Annual monitoring</p> <p>A regional conservation assessment for mountain sucker was developed in 2006.</p> <p>The only <i>published</i> Conservation Strategy available is for Canada lynx. This was implemented through the completed forest plan revision. The Northern Rockies Lynx Amendment that may further refine plan direction is still pending, due for completion in 2007.</p> <p>Forest Service Region 2 completed numerous Species Conservation Assessments of many sensitive and local concern species to assist forests in project and forest level assessment needs, with the Forest providing input to that process.</p>
		2. Acres of species at risk habitat restored or improved by Forest Service management or permitted activities.	<p>Annual monitoring</p> <p>Approximately 5 acres of Mill Creek have been excluded from livestock grazing through the use of a riparian enclosure. Willows were experimentally planted in the enclosure in 2006. It is unknown how successful these plantings will be. Mill Creek contains a population of native Yellowstone cutthroat trout.</p> <p>1,816 acres of prescribed burning was conducted, achieving both fuels reduction and wildlife habitat improvement objectives.</p> <p>About 220 acres of aspen were treated through conifer removal by hand crews (non-merchantable) benefitting all emphasis species.</p>

	Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wildlife Discussion
9.	NFMA Species Viability Objective 1b Strategies 1 – 5, cont.		2., cont	<p>A 15-acre enclosure was constructed at the Muddy Creek site following commercial conifer removal in a partner funded project (RMEF) on the PRRD. A 3-acre enclosure was established at Mill Creek on MWPRRD to benefit riparian species' habitat, including Yellowstone cutthroat. About 500 acres of riparian and upland enclosures maintained for wildlife and fish habitat objectives.</p> <p>Approximately 100 acres of meadow habitat was maintained through conifer removal (non-merchantable) benefitting most emphasis species.</p> <p>Habitat for plant species at risk was surveyed. Sites of known and newly discovered populations of species at risk were provided to the Project Interdisciplinary Teams to include protections in the project designs for plant species at risk.</p>
			3. Acres of species at risk potential habitat inventoried.	<p>Annual monitoring</p> <p>No habitat was inventoried, specific to Yellowstone cutthroat trout or mountain sucker.</p> <p>Forest participated in region-wide survey of potential goshawk habitat, with about 1,200 acres surveyed following national protocol.</p> <p>West zone biologist conducted carnivore snow-track surveys, involving 2 days survey time with no detections of at risk species. Survey represented approximately 3,500 acres.</p> <p>West and east zone biologists surveyed 82 owl boxes installed in potential habitat, with one boreal owl detected nesting, the first confirmed record for the Forest. 1 night of calling stations for owls conducted with no detections. Approximately 5,000 acres covered in these efforts.</p> <p>Approximately 1,500 acres of potential amphibian habitat surveyed in the Little Bitmore, Spanish Point, Beaver Creek AMP, West Ten 2, and Battle Park AMP project areas with no new detections of amphibian locations.</p>

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wildlife Discussion
9. NFMA Species Viability Objective 1b Strategies 1 – 5, cont.		3., cont.	<p>Water voles surveyed for on Middle Fork Paintrock Creek from Middle Fork T.H. to Lilly lake with none found, representing approximately 400 acres.</p> <p>Five caves surveyed for bats within project areas: Tensleep Canyon, Battle Park, and Beaver Creek with no bat use detected.</p> <p>Coordination with Wyoming Game and Fish regarding bighorn sheep occurred for the Devils Canyon herd including Forest monitoring assistance through GPS collars and GIS services.</p> <p>13,900 acres between the Babione, Little Bitmore, and Spanish Point projects and approximately 3.7 miles of trail reroutes were surveyed for plant species at risk.</p>
		4. Acres of species at risk occupied habitat and/or populations discovered.	<p>Annual monitoring</p> <p>No new populations of Yellowstone cutthroat trout or mountain sucker were discovered.</p> <p>One boreal owl nest detected occupied as mentioned above, representing approximately 1,000 acre home range. Known breeding populations of amphibians were monitored on the Tongue RD, representing approximately 1,000 acres. Known goshawk nests monitored representing 5,000 acres.</p> <p>Eighteen new populations of plant species at risk were discovered in FY06. <i>Botrychium paradoxum</i> was discovered in 2006, which was a new discovery for Wyoming. This species is added to the Bighorn NF Species of Local Concern.<sup>1</sup></p>

<sup>1</sup> If this species is added later to the Regional sensitive species list, the more critical designation will supercede the species of local concern designation.

	Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wildlife Discussion
9.	NFMA Species Viability Objective 1b Strategies 1 – 5, cont.		5. Acres of vegetation management projects and natural disturbances that occurred in lynx habitat and winter snowshoe hare habitat during the previous fiscal year. Update vegetation GIS coverage to include these acres and compare with suitable habitat thresholds.	Annual monitoring There were no significant vegetation management projects completed in lynx habitat within Lynx Analysis Units this fiscal year. Upcoming projects to be completed include the Bald Mtn. salvage project, Woodrock project, Swamp Timber Sale. There were no significant changes to the suitable lynx habitat thresholds in 2006 as reported in the Revised Forest Plan BA.
			6. Number of species or habitat monitoring programs established/implemented, including cave resource management and Research Natural Area (RNA) management plans.	Annual monitoring No new monitoring programs were established. A total of 13 (wildlife = 11, botany = 1, aquatics = 1) species/habitat monitoring programs were conducted in 2006. No Cave Resource Management Plans or Research Natural Area Management Plans were developed in 2006. Two plant species at risk were monitored - <i>Cypripedium montanum</i> (mountain lady's slipper) and <i>Rubus arcticus</i> ssp. <i>acaulis</i> (dwarf raspberry).
			7. Summarize species- specific monitoring results.	Monitoring frequency specific to the monitoring protocol. 1) Long-term, Forestwide trend data for Yellowstone cutthroat trout is not available. The Wyoming Game and Fish monitors these populations approximately every five years, and the data is shared between agencies. 2) Population data for desired non-native fish species, rainbow and brook trout implies that the ecological conditions are adequate to sustain viable populations. 3) Rainbow trout are often captured at existing survey locations, however; Aquatics Program personnel have not conducted population surveys specific to rainbow trout for MIS monitoring. Monitoring specific to rainbow trout will begin in 2007 at long-term monitoring stations.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wildlife Discussion
9. NFMA Species Viability Objective 1b Strategies 1 – 5, cont.		7., cont.	<p><i>Cypripedium montanum</i> (mountain lady’s slipper) monitoring at Story, Wyoming, reveals that stem counts vary from year to year as does the flower counts, as well as the number of seed capsules maturing, regardless of the thinning or burning treatment. At this point, it appears that these changes can be attributed to predation by insects and ungulates, weather, as well as plant collecting.</p> <p><i>Rubus arcticus</i> ssp. <i>acaulis</i> (dwarf raspberry) monitoring along Sourdough Creek also reveals inconsistent data. One plot has had “significant “ change between each successive year of monitoring as well between each year and the base year of 2000. Two plots have not had any “significant” change since the inception of the monitoring. The other three plots have had years of no “significant” change to some years with “significant” change, but without any consistency..</p> <p>Wildlife species reported below.</p>
		8. Number of acres of demand species habitat improvement, including big game winter range.	<p>Annual monitoring</p> <p>As described above for species at risk: prescribed burning, aspen treatment, meadow encroachment, and exclosure maintenance similarly benefited these species. Winter range in Clear Creek drainage specifically targeted with prescribed burning, approximately 400 acres.</p> <p>No acres of habitat for demand plant species were improved, but seven new populations of <i>Hierchloe ordorata</i> (sweetgrass) were documented in FY06.</p>
10. NFMA Species Viability Objective 1b, Strategies 5-11	Are the habitat trends (and therefore population trends by inference) for MIS and other emphasis species being maintained or improved with respect to management activities conducted?	1. Acres and condition of habitat on the Forest for each avian and the red squirrel MIS. Associate habitat trend with available population data where feasible. Participate in the interagency statewide avian population monitoring effort (Monitoring Wyoming’s Birds).	<p>Annual monitoring</p> <p>The Forest completed its participation in the statewide and Forest-specific avian monitoring program in association with the Rocky Mountain Bird Observatory. See Appendix A for details.</p>



Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wildlife Discussion
10. NFMA Species Viability Objective 1b, Strategies 5-11, cont.		2. Results of beaver (MIS) colony reintroduction and aerial survey of number of occupied 6 <sup>th</sup> -level Hydrologic Unit Code (HUC) watersheds. Tie to habitat condition and trend monitoring provided through aquatic and range resource monitoring.	Monitor every five years; due in 2011.
		3. Acres of elk (MIS) security areas, and association with past amounts available, elk distribution patterns, harvest success, hunt area strategies, herd composition, and population objectives. Updates to road density and vegetation GIS layers to rerun security habitat model.	Monitor every five years; due in 2010 and 2015.
		4. Continued habitat use by bats at known occupied caves. Cave roost surveys and other methods.	Monitor every five years; due in 2010 and 2015.
		5. Continued habitat use by goshawks in known nesting territories where active vegetation management has occurred. Verification through nest search with broadcast calls.	Annual monitoring East and West zone biologists monitored previously known goshawk nests. Predawn surveys done in Shell Canyon - no goshawks found. Goshawks found behind Porcupine Ranger Station, near Spanish Point, Middle Paintrock Trail, and SW Fuels project area with nests unconfirmed. Bucking Mule Falls trail and Cold Springs goshawk nests unoccupied this year. Nickel Mine nest on Tongue RD active. Information shared with WYNDD.
		6. Continued habitat use by water voles in known locations using live trap or other methods.	Monitor every five years; due in 2010 and 2015.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wildlife Discussion
10. NFMA Species Viability Objective 1b, Strategies 5-11, cont.		7. Continued habitat use by forest carnivores in known locations using snow-track or other methods. Determine validity of any reported lynx sightings upon report.	Monitor every two years; due in 2007, 2009, 2011, 2013, 2015.
		8. Continued habitat use by amphibians in known locations. Number of reintroductions or expansions of range in stream reaches.	Monitor every five years; due in 2010, 2015.
		9. Rainbow trout (MIS) and Yellowstone cutthroat trout (sensitive species) habitat condition and trend. Report expansions of Yellowstone cutthroat trout populations by stream name and length.	Monitor every five years, due in 2010, 2015.
		10. Continued habitat use by raptor and other rare avian species where known nest locations occur. Nest searches and expanded inventories.	Monitor every 10 years; due 2015.

Notes: Many items above depend on coordination with Wyoming Game and Fish Department, and reliance on their population/harvest data for big game and fish species. Surveys for Forestwide distribution for several at-risk species (water vole, bats, avian, amphibians, carnivores, raptors) have not been completed and would be the goal in next planning period.

**Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?**

41. Objective 1b Strategy 2	Have management strategies (goals, objectives, standards, guidelines) resulted in an improved status for species at-risk and MIS?	1. Revisit known location, habitat and population trend information data in conjunction with heritage databases or other sources.	Monitor every 10 years; due 2015.
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Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wildlife Discussion
41. Objective 1b Strategy 2, cont.		2. Compare existing status to previous status by species.	Monitor every 10 years; due 2015.
		3. Validate appropriateness of MIS selected, and the management direction associated with them (e.g., elk security).	Monitor every 10 years; due 2015.

Notes: Tie known information to regional species assessments as applicable. Amend or edit plan to reflect species at risk or other emphasis species categorizations to ensure correct habitats/species are being monitored. Verify if resource outputs are in concert with habitat desired conditions, standards, and guidelines. Alter or amend plan direction as needed. Determine if there were significant changes in elk security habitat, and if these resulted in improved hunting opportunities. Determine if improvements were made in presence/absence or distribution for species for which little information is known.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Fire and Timber Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
11. Objective 1c Strategies 1 – 7	Is the Bighorn National Forest increasing the amount of vegetative communities restored to or maintained in a healthy condition with reduced risk and damage from fires, insects and diseases and invasive species?	1. Compare the acres estimated to be treated in the Revised Plan with the actual number of acres treated. Track the results of natural disturbances. Add to actual number of acres treated. Update the GIS vegetation database with all vegetation changes. See note below for treatments estimated for this plan period.	Monitor every 5 years; due in 2010, 2015 to compile annual accomplishments.
		2. Review vegetation treatments to see if they mimic the scale and effect of natural processes.	Monitor every 5 years; due in 2010, 2015.
		3. Deleted; duplicate of #12	

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Fire and Timber Discussion
11. Objective 1c Strategies 1 – 7, cont.		4. Summarize acres of aspen treated. Summarize efforts and results of inventory/monitoring for condition of stands.	Monitor every 5 years; due in 2010, 2015.
		5. Identify location and amount of old growth and compare to desired amounts. Update vegetation coverage in GIS.	Monitor every 10 years; due in 2015.
		6. Summary of control measures for insect/disease outbreaks in high value areas (acres treated).	Monitor every 3 years; due in 2008, 2011, 2014. Clarification of “high value areas” is needed. For example, does high value area = WUI, trailheads and campgrounds?
		7. Summarize insect/disease treatments, and compare to aerial inventory of insect/disease occurrences and extent to determine effectiveness.	Monitor every 3 years; due in 2008, 2011, 2014.
		8. Summary of wildland fire interagency relationships maintained, fostered or improved. Summary of firefighter and public safety based on these actions.	Monitor every 3 years; due in 2008, 2011, 2014.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Fire and Timber Discussion
11. Objective 1c Strategies 1 – 7, cont.	9. Acres of fuel reduction accomplished in Fire Regimes I, II, and III.	<p>Annual monitoring item.</p> <p>Fuels treatments (those funded through National Fire Plan monies) were recorded in the NFORS database in 2006. Total of 2,567 acres were treated: 1,437 acres treated within Wildland Urban Interface (WUI) areas, and 1,130 acres outside of these zones (55/45% split). These figures represent 1,816 acres of prescribed burning in broadcast burns including the Story, Pete’s Hole, South Slope, Little Horn, Grouse Creek, Shell Canyon, Spring Creek, and Zaybrook projects.</p> <p>Other treatments included 220 acres of aspen treatment, 135 acres of hand piling and burning piles, and 396 acres of lands treated through USFS grants in WUI areas adjacent to the Forest (Story, Canyon Creek). An additional 1,300 acres of non-National Fire Plan funded fuels treatments were claimed as treated through the award of the Woodrock project contract, which is also considered a WUI treatment due to summer homes and guard stations in the project area.</p>	
	10. Number of wildland fire use plans completed. Number of acres treated.	<p>Annual monitoring item</p> <p>No fire use planning was conducted on the Bighorn in 2006, and therefore no acres treated. The Fire Management Plan was updated in 2006 to reflect wilderness values and fire suppression processes, but fire use planning is anticipated to occur in 2007.</p>	

Notes: The following vegetation treatments will be monitored.

- |                                    |  |                                     |
|------------------------------------|--|-------------------------------------|
| A. Clearcut                        | F. Precommercial timber stand improvement  | J. Insect and disease mortality*    |
| B. Shelterwood – prep cut          | G. Uneven-aged management, selection   | K. Blowdown*                        |
| C. Shelterwood – seed cut          | H. Prescribed fire   | L. Commercial intermediate harvests |
| D. Shelterwood – overstory removal | I. Wildland fire use/wildfire*   | M. Reforestation                    |
| E. Aspen regeneration/maintenance  | * These are not planned actions but will be tracked through GIS vegetation database. |                                     |

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Fire and Timber Discussion
<b>Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?</b>			
44. Objective 1c Strategy 4	Were the actions taken to minimize insect/disease epidemics effective?	From summary of treatments, compare to aerial inventory of insect/disease occurrences and the extent of them to determine effectiveness.	Monitor every 5 years; due in 2010, 2015
45. Objective 3b, Strategies 1 – 3	Is the Bighorn National Forest improving the knowledge base provided through research, inventory, and monitoring to enhance scientific understanding of ecosystems, including human uses, to support decision-making and sustainable management of the Bighorn National Forest?	Utilize Forestwide inventory and analysis plots (Forest Inventory and Analysis), and FSVeg data from projects, Forest Health Management plots, to validate stand condition standards and guidelines, such as snags, coarse woody debris, old growth, habitat descriptions, fuel conditions.	Monitor every 10 years; due in 2015

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Timber Discussion								
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>											
27. Objective 2c Stewardship Strategy 1	Is the Bighorn National Forest utilizing stewardship contracting appropriately? Is stewardship contracting a benefit to local communities?	Narrative summary of stewardship contracts utilized compared to the opportunities and other tools used. Estimate benefits to communities.	Monitor annually The Forest has sold Integrated Resource Stewardship Timber Contracts in 2005 and 2006. Stewardship projects identified in these contracts would have been difficult to accomplish without this tool. Working circle mills were successful in competing for these contracts, and they utilized local and area sub-contractors in their bids.								
29. Objective 2c Timber Strategies 1, 2, 3	Is the Bighorn National Forest providing the desired level of uses, values, products and services of wood products?	Forest product outputs in CCF and approximate MMBF, including: Sawtimber (7" +), Roundwood (5-6.9"), Personal Use Fuelwood, Other Vegetation Management, Allowable sale quantity, Christmas Trees and Special Forest Products	Monitor annually Forest product outputs compared with Forest Plan projections are shown in Table 1 below. Generally the Forest is close to the projected program quantities. There are two exceptions. 1) Only 25 percent of the projected POL material was sold, however, with increased utilization and demand from industry, we hope this amount will increase. 2) Other Vegetation Management (OVM) is at 241 percent of projections, a result of one large project (Bench Stewardship). There are no future projects of that scale on the planning schedule.								
<p>Notes: The Revised Plan projected the following outputs annually:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Sawtimber (7" +): 10,688 CCF, (3.9 MMBF)</td> <td style="width: 50%;">Allowable Sale Quantity: 27,183 CCF, (9.8 MMBF)</td> </tr> <tr> <td>Roundwood (5-6.9"): 1,693 CCF, (0.6 MMBF)</td> <td>Christmas Trees (number sold): 2,100 trees</td> </tr> <tr> <td>Personal Use Fuelwood: 3,000 CCF, (1.5 MMBF)</td> <td>Special Forest Products: 3,000 permits</td> </tr> <tr> <td>Other Vegetation Management: 3,550, (1.3 MMBF)</td> <td></td> </tr> </table>				Sawtimber (7" +): 10,688 CCF, (3.9 MMBF)	Allowable Sale Quantity: 27,183 CCF, (9.8 MMBF)	Roundwood (5-6.9"): 1,693 CCF, (0.6 MMBF)	Christmas Trees (number sold): 2,100 trees	Personal Use Fuelwood: 3,000 CCF, (1.5 MMBF)	Special Forest Products: 3,000 permits	Other Vegetation Management: 3,550, (1.3 MMBF)	
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Personal Use Fuelwood: 3,000 CCF, (1.5 MMBF)	Special Forest Products: 3,000 permits										
Other Vegetation Management: 3,550, (1.3 MMBF)											
<b>Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?</b>											
48. CFR 219.14 Objective 2c, Timber Strategy 2	Is the Bighorn National Forest inventory of lands suitable for timber production (suited lands) accurate?	Utilize the three-step process outlined in law and direction to evaluate the suitability of lands for timber production. Review the Bighorn National Forest suitability key to determine its validity in implementation.	Monitor every 10 years; due in 2015								

Table 1. Forest timber product output compared to Forest Plan projections to date.

<b>Activity</b>	<b>Total volume equivalent MBF</b>	<b>Total Volume Offered</b>	<b>Sawtimber Vol. (7"+)</b>	<b>Sawtimber Vol. (7"+)</b>	<b>POL (Live 5"-6.5")</b>	<b>Mortality Volume (dead)</b>	<b>OVM Volume</b>	<b>Christmas Trees</b>	<b>Special Forest Product Permits</b>
<b>Unit of Measure</b>	<b>est. MBF</b>	<b>CCF</b>	<b>est. MBF</b>	<b>CCF</b>	<b>CCF</b>	<b>CCF</b>	<b>CCF</b>	<b>Each</b>	<b>Each</b>
ASQ 2005 Forest Plan Projection	9,800	27,183	9,800	23,467	3,716	No projected output in Forest Plan.			
TSPQ 2005 Forest Plan Projection	4,500	24,031	3,900	10,688	1,693	3,000	3,550	2,100	3,000
2005	9,255	19,687	0	0	400	2,200	17,087	1,819	2,778
2006	8,786	18,715	7,524	16,102	442	2,171	0	1,696	2,722
Total Actual Output	18,401	38,402	7,524	16,102	842	4,371	17,087	3,515	5,500
Total Projected ASQ Output	19,600	54,366	19,600	46,934	7,432	No projected output in Forest Plan.			
Total Projected TSPQ Output	9,000	48,062	7,800	21,376	3,386	6,000	7,100	4,200	6,000
% of Projected ASQ Output	92%	71%	38%	34%	11%	No projected output in Forest Plan.			
% of Projected TSPQ Output	200%	80%	96%	75%	25%	73%	241%	84%	92%

ASQ – Allowable Sale Quantity

TSPQ – Total Sale Program Quantity



Monitoring Driver	Monitoring Question	Potential Monitoring Items	Invasive Species Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
12. Objective 1.c, Invasive Species Strategy 2	How many total acres of all noxious weeds are known to occur on the Forest?	Acres of noxious weeds	Monitor every 5 years; due in 2010, 2015. About 360 acres are known to occur on the Forest.
	How many acres of priority noxious weeds are known to occur on the Forest?	Acres of priority noxious weeds Priority species included leafy spurge, yellow toadflax, ox-eye daisy, hoary cress, and spotted knapweed.	Monitor every 5 years; due in 2010, 2015..
	How many acres of priority noxious weeds have been treated this year by what means?		Monitor annually About 18 acres were treated for the priority weed species listed above. Methods included both mechanical and chemical treatments.
	How many total acres of noxious weeds have been treated this year?	Acres of noxious weeds	Monitor annually Approximately 360 acres were treated for noxious weeds in FY 2006.
	What prevention activities and cooperative efforts have been implemented during the past year?	Narrative description	Monitor annually The Bighorn National Forest continues to have a relatively small amount of noxious weeds. Our primary method of treatment is through cooperative agreements with Big Horn, Johnson, and Washakie Counties. Interface money was also used to do treatment and inventory on lands adjacent to Forest.  An increased level of weed awareness on the Forest through educational programs presented to seasonal crews has led to identification of new populations of noxious weeds on the Forest and follow-up treatment has occurred or is planned. Noxious weed prevention and control is considered in NEPA projects on the Forest, including timber harvest, grazing activities, and dispersed and developed recreation.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Invasive Species Discussion
12. Objective 1.c, Invasive Species Strategy 2, cont.		Narrative description, cont.	A growing concern is the dispersal of noxious weeds through ATVs and 4x4 pickups coming from other areas. Surveys have begun to pick up Russian knapweed in and along some roads, and it is suspected that the weed seed is dropping off undercarriages.  Weed seed free feed program continues to be monitored and compliance by forest users in general is very good. Treatment and monitoring in Johnson County included work by Wilderness Rangers with help from volunteers in addressing ox-eye daisy near the Could Peak Wilderness in the Circle Park Trailhead area.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Recreation Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
13. Objective 1a Strategy 2	Is usage of dispersed campsites negatively impacting watershed conditions?	Campsite impacts measured and reported using campsite inventory process.	Monitor every 5 years; due in 2010, 2015.
Notes: Campsite condition and numbers can help to determine a trend of potential physical or biological resource damage. Continued growth of unplanned dispersed recreation is a concern.			
14. Objective 2a Strategy 2	Are developed recreation sites/facilities providing diverse, high quality outdoor recreation opportunities?	Number of master plans written for developed sites.	Monitor every 5 years; due in 2010, 2015.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Recreation Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
15. Objective 2a, Strategies 2, 5, 8 - 12 Objective 2c, Tourism and Recreation Strategies 1-3 Objective 4a, Strategy 2	Does the demand for recreation warrant development of additional opportunities (e.g. trails, dispersed campsites, etc.)?	Narrative description using customer surveys, public contacts, field observations, visitation use records and projections and comparison to available capacity.	Monitor every 5 years; due in 2010, 2015.
16. Objective 2a Strategy 3	To what extent were vegetation management plans written for developed recreation sites?	Number of vegetation management plans for developed sites and condition of the resource in developed sites.	Monitor every 5 years; due in 2010, 2015.
17. Objective 2a, Strategies 5, 6, 9, 10, and 12 Objective 4a, Strategy 1	Is an adequate range of travel opportunities being offered across the Forest?	<p>1. Individual and organized recreation club contacts, location, trend, and nature of use conflicts, Incident Reports.</p> <hr/> <p>2. Number of travel management plans completed.</p> <hr/> <p>3. Scenic byway day use trail completed.</p>	<p>Monitor every 3 years; due in 2008, 2011, 2014.</p> <hr/> <p>Annual monitoring Hunt Mountain Travel Management Planning started with the issuance of a predecisional EA for public comment. Issuance of the final EA and decision have been temporarily halted while the Forest develops a roadless-compliant alternative which will be shared with the project mailing list in early 2007. It is anticipated that a final decision will be issued by mid 2007.</p> <p>The Powder River Ranger District continued to implement the Clear/Crazy Designated Motorized Travel System decision of 2005. During 2006 nearly eight (8) miles of ORV trails, located during the summer of 2005, were constructed. Only one trail remains to be constructed to complete the Clear/Crazy decision. It is about 4 miles in length and requires two costly bridges.</p> <hr/> <p>Monitor every 5 years; due in 2010, 2015</p>

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Recreation Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
Notes: Studying use and projected demand should assist in future project planning to provide multiple benefits to multiple people. Vegetation within developed facilities (e.g., campgrounds) contributes substantially to the recreation setting. Attaining desired conditions and monitoring results will protect these values over the life of the facility.			
39. Objective 2c, Tourism and Recreation Strategy 1 Objective 3b, Strategy 3	Are research, education, and interpretation activities being conducted and in conjunction with partners?	Number of educational presentations, research projects, agreements, or activities conducted with and for others. Identify by resource function.	Monitor annually The Aquatics Program provided two aquatic ecology presentations for the SMARTY bus effort (Tongue River Elementary and Coffeen Elementary Schools) and one presentation for Woodland Park Elementary School. Forest personnel reported education and interpretation programs for more than 8,500 people in FY2006. Occasions ranged from Kid's Fishing Days, Smokey at pre-school, and high school career days to cabin owner's picnics, travel management field trips and bus tours at Shell Falls. Recreation, Fire, Timber/Range, and Fish/Wildlife each contributed about 25% of the programs. There were parade entries in Sheridan, Dayton, Story and Buffalo.

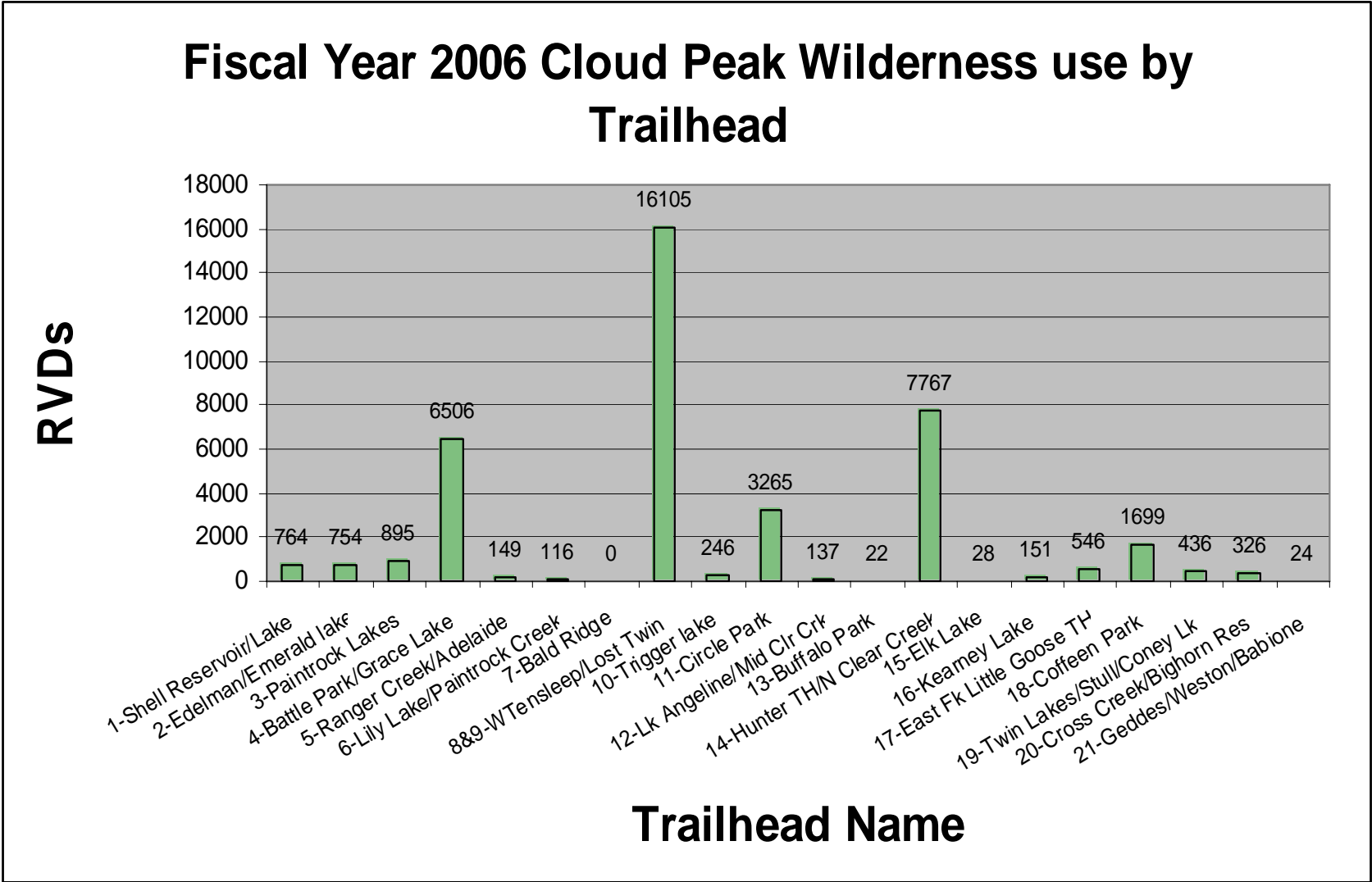
Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wilderness Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
18. Objective 2b, Wilderness Strategies 2 – 5	Are human uses of wilderness allowing for preservation of wilderness resources?	Report soil and vegetation disturbed by human use based on a sample of use areas.	Monitor every 5 years; due in 2011, 2016. In FY 2006, the reinventory of the Cloud Peak Wilderness campsites was completed. This was a two-year project completed by volunteers using protocols outlined by Dr. David Cole. Analysis of the data shows a couple of positive trends from review of the 2000 reinventory and the 1996 baseline sampling.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wilderness Discussion
18. Objective 2b, Wilderness Strategies 2 – 5, cont.			<p>The amount of bare ground per campsite has leveled off and actually shows a 2.4% decrease in square feet of bare ground per campsite. This is tempered by the fact that the 2000 and the 2005-2006 data shows average bare ground per campsite at 776 square feet which is above Forest Plan guidelines of 500 square feet per campsite established in the 1998 forest plan revision.</p> <p>Illegal campsites are revegetating within the 100-foot, no-camping area around the lakes. Fewer illegal campsites were inventoried in 2005-2006 survey than observed in previous inventories with a decrease of 13% from the 2000 data. Two areas, however, had significant increases in new sites. Both Sherd Lake and Seven Brothers lakes have twice the amount of bare ground as inventoried in 2000. The bare areas are beyond the 100 foot minimum distance from water. Consistent education using the Leave No Trace Outdoor Skills and Ethics must continue and wilderness rangers field presence is critical for enforcement of the Cloud Peak Wilderness regulations to continue to improve the disturbed areas near water.</p>
Is the quantity of dead and down woody debris adequate to maintain natural soil characteristics and functions?	Evaluate tons per acre of dead and down woody material. (Brown – Handbook for Inventorying Downed Woody Material)	Monitor every 5 years; due in 2010, 2015. <b>Recommendation: Change the survey frequency of this parameter since it will take more than 100 years to reestablish natural levels of dead and down woody material per the research information available.</b>	
What level of crowding occurs on trails? Does the wilderness provide opportunities for solitude?	Report number and type of users by trailhead, law enforcement contacts, and educational presentations.	Monitor annually Users by travel method and trailhead – <b>See Figures 1 and 2 below.</b> Law Enforcement contacts - Eight violations were issued during 2006 with one for 261.16b – bicycle; two for 261.52a – campfire above 9,200 feet in elevation; one for 261.58e – camping less than 100 feet from water, three for 261.58f over group size of 10, one for 262.58aa livestock tethered less than 100 feet from water. The total is 8 equal to last year’s total of 8.	

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wilderness Discussion
18. Objective 2b, Wilderness Strategies 2 – 5, cont.	Are special exceptions affecting the wilderness resource?	Report the number and type of special exceptions to limited activities	<p>Warning notices were issued to 12 individuals for the following violations: one for 261.52a – campfire above 9,200 feet, six for 261.57a – failing to complete a required registration, one for 26.58a camping longer than 14 days, two for 261.58f over group size of 10, one for 261.58e – camping less than 100 feet from water, and one for 261.58aa – tethering livestock less than 100 feet from water.</p> <p>Incidents were tracked also with a total of 74 for various infractions of the Cloud Peak Wilderness regulations. The most incidents tallied was 47 for campfires above the 9,200’ elevation limit.</p> <p>Wilderness Rangers conducted impromptu sessions in the wilderness including session held at Spear-O-Wigwam for 30 guests and staff. As in previous years, the self study Leave No Trace (LNT) sessions were held for groups stopping at the offices. At least 50 to 100 visitors to the Cloud Peak Wilderness completed the LNT awareness session the Powder River RD office. Cloud Peak Wilderness Rangers made over 500 field contacts during the summer of 2006.</p> <p>Monitor annually</p> <p>Special exceptions were authorized by the Forest Supervisor during the summer of 2006 for search and rescue operations conducted by the local Sheriffs’ offices. Four motorized accesses were allowed. However one of the authorizations was not used and the rescue was conducted by horseback. One request for use of chain saw by Forest Service suppression crews was authorized in the Shell Creek drainage east of Adelaide Trailhead.</p> <p>Staff worked to develop an alternate route for the Big Horn Endurance Ride outside the Cloud Peak Wilderness. This removed an exception or non-complying special-use from Wilderness. Additional work with event organizers to refine the route is anticipated in future years.</p>

Notes: Monitoring may indicate if a limited permit system or other restrictions are necessary.

Figure 1. 2006 wilderness use by trailhead



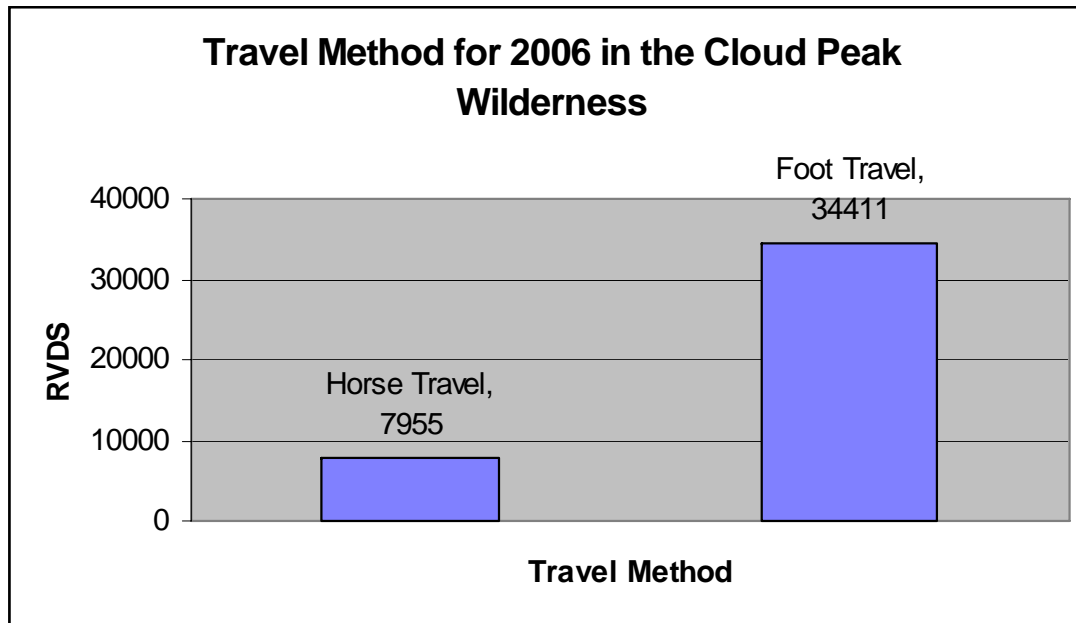


Figure 2. Breakdown by travel method.



Monitoring Driver	Monitoring Question	Potential Monitoring Items	Wilderness Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
19. Objective 2b Wilderness Strategy 1	Are air and water quality being improved, maintained or degraded in the Cloud Peak Wilderness, and on the Forest as a whole?	1. Number of burning permits requested compared with number of permits approved.	<p>Monitor annually</p> <p>An annual implementation meeting was held with the Wyoming DEQ and National Weather Service with regards to smoke permitting process associated with wildfire and prescribed burning. There were no incidences of smoke-related impairments to the Sheridan non-attainment zone, and all burns had been properly permitted. The Forest had significant smoke related haze due to wildfires in surrounding areas during the summer of 2006. Smoke monitoring (photo based) of the Story prescribed burns was used as a demonstration project, as no impact from smoke was observed to that community from USFS burning activities.</p>
		2. Collect and analyze alpine lake water samples for information on air and water quality. Apply quality assurance protocol.	<p>Monitor annually</p> <p>1) Air quality data is collected in Florence Lake and Emerald Lake, for long-term regional air quality assessments. Interpretations can also be made for water quality in the wilderness. That data has not yet been analyzed for air or water quality trend.</p> <p>2) Wilderness Watch collects annual baseline data for streams that flow from the Cloud Peak Wilderness.</p>
		3. Review state air quality data for incidences of impairment in relation to Forest activities.	<p>Monitor annually</p> <p>Wyoming Department of Environmental Quality did not identify any air quality standards exceedences relative to Forest Service activities.</p>
		4. Prepare summary of annual compliance and identify needed improvements.	<p>Monitor annually</p> <p>The Forest complied with Wyoming Department of Environmental Quality smoke management plan for prescribed burning activities and had no areas of impairment or exceedance of plan standards.</p>

20. This Monitoring Driver was a duplicate of #18. The number has been retained to avoid renumbering all subsequent monitoring drivers.

	Monitoring Driver	Monitoring Question	Potential Monitoring Items	Heritage Resources Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>				
21.	Objective 2b Heritage Strategy 1	Have programmatic agreements for heritage resources been negotiated and implemented for Forest programs?	<p>1. Number and types of agreements in place.</p> <hr/> <p>2. Identify other program needs and reduce backlog.</p> <hr/> <p>3. Summarize if terms of agreements are being met.</p>	<p>Monitor every two years; due in 2007, 2009, 2011, 2013, 2015</p> <p>Four programmatic agreements are in place: 1) travel management, 2) fire, 3) Medicine Wheel NHL, and 4) range permit renewals.</p> <hr/> <p>Monitor every two years; due in 2007, 2009, 2011, 2013, 2015</p> <p>Other needs are being address in an inclusive PA under development</p> <hr/> <p>Monitor annually</p> <p>Terms of programmatic agreements for travel management, fire, and range permit renewals are being met.</p> <p>The programmtic agreement for the Medicine Wheel NHL requires completion of a survey report.</p>
22.	Objective 2b Heritage Strategy 2	Is the Bighorn National Forest preparing and implementing Historic Preservation Plans?	Number of plans completed and implemented.	<p>Monitor annually</p> <p>Three plans (Target = 8) have been completed (Medicine Wheel, Hunt Mt., and Woodrock), and two are currently being prepared.</p>
23.	Objective 2b Heritage Strategy 3	What progress has the Forest made for inventorying areas having a high probability for heritage resources?	<p>1. Acres inventoried.</p> <hr/> <p>2. Number of new sites evaluated.</p> <hr/> <p>3. Number of backlogged unevaluated sites that have been evaluated.</p>	<p>Monitor annually</p> <p>Total acres inventoried at end of FY 2006 = 3,230.</p> <p>Cumulative acres inventoried since 2005 = 10, 390.</p> <hr/> <p>Monitor annually</p> <p>Fifty-three new sites evaluated in FY 2006.</p> <hr/> <p>Monitor annually</p> <p>Four</p>

	Monitoring Driver	Monitoring Question	Potential Monitoring Items	Heritage Resources Discussion
23.	Objective 2b, Heritage Strategy 3, cont.		4. Number of sites evaluated sent to the State National Register of Historic Places.	Monitor annually None
Notes: Related to Section 110 of the National Historic Preservation Act.				
24.	Objective 2b Heritage Strategy 4	Is the Forest meeting its consultation responsibilities for American Indian traditional cultural properties?	1. Number of sites identified.	Monitor annually
<hr/>				
			2. Number of sites consulted on.	Monitor annually The Forest is meeting its consultation responsibilities, primarily by letters to tribes and face-to-face during consultation meetings in association with the Medicine Wheel NHL.
Notes: Includes responsibilities under Sections 110 and 106 of the National Historic Preservation Act.				
25.	Objective 2b, Heritage Strategy 5 Objective 2c, Tourism and Recreation Strategy 2	What actions has the Forest taken to increase public awareness and education of heritage resources?	1. Number of projects conducted.	Monitor annually Two "Windows on the Past" projects were completed.
<hr/>				
			2. Number of heritage programs delivered.	Monitor annually Approximately 200 heritage programs have been delivered, on the Forest and in the surrounding communities.
<hr/>				
			3. Number of interpretive signs or brochures constructed or maintained.	Monitor annually Forty-three interpretive signs or brochures were constructed or maintained.

In 2006, Section 110 projects fulfilled many goals of the Heritage Resources program including public outreach and participation, education, survey objectives, and accomplishments on site backlog. Support work to other programs continued to occur, with over 30 projects being accomplished. Some of the larger and/or complex projects included Rocky Creek AMP, South West Fuel, fuel reduction program, Hunt Mountain Travel Management, and three small timber sales.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Livestock Grazing Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
26. Objective 2c Livestock Grazing Strategies 1 and 2	What total AUMs were permitted through term permit this grazing season?	AUMs Permitted	Monitor every five years; due in 2010, 2015 112,680. This did not change from FY 2005 to FY 2006.
	What total AUMs were authorized through term permit this grazing season?	AUMs Authorized	Monitor every five years; due in 2010, 2015 86,793 in 2006. 81, 363 AUMs were authorized in FY 2005.
	What total acres of suitable rangeland are in active allotments?	Acres in allotments	Monitor every five years; due in 2010, 2015
	How many pastures were monitored this year to determine whether allowable use standards were met?	Pastures monitored	Monitor annually This field was not be completed for monitoring year 2006 because information is not available in the database at this time.
	How many pastures that were monitored did meet allowable use standards?	Pastures meeting allowable use standards	Monitor annually This field was not completed for monitoring year 2006 because information is not available in the database at this time.
	In pastures that were monitored, how many key areas were inspected for compliance with allowable use standards using the various protocols?	Number of key areas monitored by specific protocol	Monitor annually This field was not be completed for monitoring year 2006 because data is difficult and time consuming to derive and assimilate, it is confusing and easily misinterpreted, and it does not accurately portray how widespread the instances of "not meeting annual utilization standards", as intended by this monitoring item
	What percent met standards?	Percent that met standards	Monitor annually Undetermined (see above comment).

26.	Monitoring Driver	Monitoring Question	Potential Monitoring Items	Livestock Grazing Discussion
	Objective 2c Livestock Grazing Strategies 1 and 2, cont.	How many allotments exceeded forage utilization standards to the point of discussing/implementing actions to resolve the situation?	Number of allotments	Monitor annually 9 in 2006 The total for FY 2005 was 6.
		How many suitable acres are meeting or moving toward desired conditions?	Acres meeting/moving toward desired condition	Monitor annually 117,306 in 2006.
			Acres not meeting or moving toward desired conditions	Monitor annually 17,990 in 2006.
			Acres undetermined	Monitor annually 158,551 in 2006.
		How many suitable riparian acres are meeting or moving toward desired conditions?	Acres meeting/moving toward desired condition	Monitor every five years; due in 2010 12,212 in 2006.
			Acres not meeting or moving toward desired conditions	Monitor every five years; due in 2010 10,514 in 2006.
			Acres undetermined	Monitor every five years; due in 2010 32,554 in 2006.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Livestock Grazing Discussion
26. Objective 2c Livestock Grazing Strategies 1 and 2, cont.	How was information sharing and cooperation with livestock permittees, state and private agriculture organizations, universities, and research partners demonstrated?	Narrative discussion	<p>Monitor annually</p> <p>The Bighorn range staff worked with Dan Uresk (Forest Service Research) and University of Wyoming extension to implement the Robel Pole monitoring method on sedimentary soil types on the North end of the Forest and trained permittees. They also read transects in cooperation with permittees and Guardians of the Range. The Bighorn range staff assisted Uresk in locating areas to clip and run plots on granitic soil types on the south end of the Forest so a guideline can be established for the granitic soils.</p> <p>CSU educator Roy Roath (funded through Wyoming Game and Fish Department) continued to work with Powder River District range specialists and Battle Park permittees to discuss and develop management options in development of revised allotment management plan (AMP).</p> <p>Forest Range Specialists attended Wyoming Section SRM in Sheridan, 4 specialists attended the 2006 Annual meeting in Reno, Nevada.</p> <p>Tongue Ranger District Range Specialist David Beard has participated in coordinating and putting on Range Schools through the Wyoming Section SRM.</p>
	How many allotments are administered by this unit?	Number of allotments	Monitor every five years; due in 2010 14 in 2005.
	How many allotments are NEPA sufficient?	Number of allotments NEPA sufficient	Monitor every five years; due in 2010 46 in 2005.
	How many allotments were covered by new NEPA decisions this fiscal year?	Number of allotment decisions this year	Monitor annually The Tongue EIS record of decision was signed in 2005. This decision covers 23 allotments. No range allotment management plan decisions were made in 2006.

	Monitoring Driver	Monitoring Question	Potential Monitoring Items	Livestock Grazing Discussion
26.	Objective 2c Livestock Grazing Strategies 1 and 2, cont.	Are existing levels of combined wildlife and livestock herbivory in key areas acceptable?	Sites monitored/sites where use was unacceptable	Monitor every five years; due in 2010.
			Narrative discussion.	Monitor every five years; due in 2010
<b>Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?</b>				
46.	Objective 2c Livestock Grazing Strategies 1, 2	Are livestock grazing standards and guidelines effective in meeting or moving toward desired conditions in riparian and upland rangeland vegetation sites?	From reference stream reaches and upland sites, determine potential and progression towards potential or desired conditions. Methods may include greenline and cross-section protocols for riparian sites and cover frequency for upland sites.	Monitor every 10 years; due in 2015

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Paleontology, Minerals Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
28A. Objective 2c Geologic and Paleontological Resources Strategy 1	Have impacts to paleontological resources resulted in a need to revise/amend the plan for additional direction?	New paleontological sites identified during cultural or other inventories and associated impacts from land management activities.	Monitor annually No new paleontological sites were identified in 2006.
28B. Objective 2c Mineral and Energy Resources Strategy 1	Are the effects of mining activities on surface resources consistent with Revised Plan expectations, as allowed in approved Plans of Operations?	Summarize monitoring efforts, results and findings under project-specific Plan of Operations.	Monitor annually The Pascalite mining operation continued under their approved Plan of Operations near the headwaters of South Paintrock Creek on the Medicine Wheel Paintrock District. The effects of the mining activities are consistent with the Revised Plan. Efforts continue to resolve the unauthorized occupancy at the Duncan/Labbe site, also on South Paintrock Creek, near the junction of FR 24 and 408. Regional Minerals staff and LE & I are involved. During the summer of 2006, a lode claim was staked in the Poison Creek drainage south of US 16 and just east of the Hazelton Peaks. The claim is a hand tool operation according to the Plan of Operations on file at the district office.



Monitoring Driver	Monitoring Question	Potential Monitoring Items	Scenery Resources Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
30. Objective 2c Scenery Strategy 1	Are Scenic Byway landscapes being managed to maintain scenic quality through time?	Report accomplishments in planning, prioritizing and implementing activities in vegetation and facility management.	Monitor every 5 years; due in 2010 and 2015.
31. Objective 2c Scenery Strategy 2	Are resource activities and forest uses consistent with the landscape character goals and scenic integrity objectives?	1. Review a sample of management activities, and compare forest plan direction with actual outcomes.	Monitor annually An evaluation of short and long term effects on scenery of the Bench Healthy Forest Initiative project and recommendations for mitigation (slash etc.) will be prepared as the project nears completion.
		2. Map and measure total acres and % of geographic area at each scenic integrity level.	Monitor every 5 years; due in 2010 and 2015
		3. Map areas needing restoration and areas restored.	Monitor every 5 years; due in 2010 and 2015
		4. Compose a narrative and photographic description of the area's landscape character and character changes.	Monitor every 5 years; due in 2010 and 2015

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Roadless Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
32. Objective 3b Strategy 1	What is the current condition of the 2005 inventoried roadless areas?	Map areas within the 2005 roadless areas that no longer maintain roadless character. Identify the types of uses and development incompatible with roadless character	Monitor every 5 years; due in 2010 and 2015 The legal struggle over roadless areas continues. A decision by U.S. District Judge Laporte reinstated the 2001 Roadless Area Conservation Rule. This also replaces the 2005 roadless inventory (494,703 acres) with the Bighorn's RACR inventory (621,000 acres).

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Facilities/Infrastructure Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
33. Objective 4a, Strategies 3 – 5	Are all system roads being maintained as desired on the Bighorn National Forest?	Percent of roads maintained to standard via force account crew, contract, cooperators, or other means (See annual Roads Accomplishment Report).	<p>Monitor annually</p> <p>All maintenance level 3, 4, and 5 roads received full maintenance to standard in 2006 (252 miles). 115 miles of maintenance level 2 roads received maintenance in 2006, which is below average for a normal year. This was due directly to equipment breakdowns, and work on major force account projects in lieu of regular maintenance (Tongue Watershed Improvement Project, Little Goose Crossing, Lilly Lake Trailhead).</p> <p>70 miles of maintenance level 1 roads were maintained (monitored) in 2006. This was about half of the Forest goal. Lack of level 1 road maintenance was due to help needed on the above mentioned force account projects.</p> <p><i>Source – Annual Roads Accomplishment Report</i></p>
34. Objective 4a Strategy 6	Are unclassified roads and trails being decommissioned?	Report road decommissioning accomplishments and trail decommissioning accomplishments performed via force account, contract, cooperators, or other means (See annual Roads Accomplishment Report).	<p>Monitor annually</p> <p>Eighteen miles of unclassified (unauthorized) roads were decommissioned in 2006.</p>

	Monitoring Driver	Monitoring Question	Potential Monitoring Items	Facilities/Infrastructure Discussion
35.	Objective 4a Strategies 7, 8	Are new construction and maintenance projects being done to reduce maintenance backlogs and are they being done consistent with the current master plan, and meeting the current image guide?	Report all new facility and transportation construction, reconstruction, decommissioning, and maintenance projects and state how they are reducing maintenance backlogs, or how they are meeting the current FMP <sup>2</sup> or the BEIG. <sup>3</sup>	Monitor annually Approximately 4 miles of trail, both motorized and non motorized, was relocated and reconstructed. This was done to reduce deferred maintenance by removing trail locations from riparian areas, and areas where illegal travel can occur, to side-slopes higher in the watershed. This was done on both the Paintrock and Tongue Watershed Improvement Projects.
36.	Objective 4a Strategies 1, 2	What is the current open road and motorized trail density as an indicator of maintenance backlog, recreation opportunity, and wildlife habitat needs?	<p>1. Summarize open road and motorized trail density by 5<sup>th</sup>-level HUC watershed or results in Roads Analysis Process.</p> <hr/> <p>2. Update GIS coverages when actions implemented.</p>	<p>Monitor every 5 years; due in 2010 and 2015</p> <hr/> <p>Monitor every 5 years; due in 2010 and 2015.</p>
37.	Objective 4a Strategy 11	How many miles of system or non-system road were decommissioned?	Review annual engineering work accomplishment reporting	<p>Monitor annually</p> <p>Thirty-six miles of system road were decommissioned in 2006, along with 18 miles of unauthorized (unclassified) road. All 54 miles of decommissioning were done in the Woodrock Area, using stewardship contracting.</p> <p>In addition, 2.5 miles of system road were decommissioned via force account in the Doyle Creek area.</p>

<sup>2</sup> Facilities Master Plan

<sup>3</sup> Built Environment Image Guide

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Facilities/Infrastructure Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
38. Objective 4b Strategy 1	To what extent are forest access needs being met?	1. Monitor concerns from local counties and forest users.	Monitor every 5 years; due in 2010 and 2015.
		2. Number and status of right-of-way acquisitions	Monitor every 5 years; due in 2010 and 2015.
Notes: Providing access to public lands is critical for meeting resource management and multiple-use objectives.			

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Soil Discussion
<b>Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?</b>			
42. Objective 1a	Are the standards and guidelines effective in meeting regional soil quality standards?	1. Conduct surveys on a representative sample of areas with management activities and uses.	Monitor annually BMP assessments of soil impacts were conducted for the Riley Point and Bald Mountain timber sales. Minimal soil impacts were identified in the Riley Point sale and some soil impacts were identified in the Bald Mountain sale, related to wet soil conditions.
		2. Measure the amount of severely impacted areas and compare with regional standards.	Monitor annually See discussion above; the amount of soil disturbance was less than 15% of the project area for both timber sales.

Monitoring Driver	Monitoring Question	Potential Monitoring Items	Biodiversity Discussion
<b>Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?</b>			
47. Forestwide Biodiversity Guideline 10 Forestwide Scenery Guideline 2	What is the relationship between guidelines for downed logs/coarse woody debris and the scenic integrity scale?	For a range of Bighorn vegetation management sites, determine "tons per acre" and other metrics of woody debris. Describe visual characteristics and other descriptive qualities of the sites. Based on field data identify relationships and determine most useful woody debris descriptors for varied resource values.	Monitor every 10 years; due in 2015.

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## APPENDIX A – NARRATIVE DESCRIPTION OF COOPERATIVE AGREEMENTS

Monitoring Driver	Monitoring Question
2. Objective 2a, Strategy 8 Objective 4c, Strategy 4	<b>How well is the Forest interacting and planning in cooperation with communities and local governments?</b>
The Aquatics Program assists with the funding of stream gauging stations in Coney Creek. This is a coordinated effort with USGS and Sheridan Area Water Supply Joint Powers Board.	
The Aquatics Program was represented at most of the Steering Committee meetings and open houses.	
Aquatics Program specialists provided input into the Washakie Watershed Steering Committee.	
Aquatics Program personnel held a coordination meeting with Wyoming Department of Environmental Quality and Wyoming Game and Fish Department.	
Babione project pre-planned with Plan Revision Steering Committee. Forest hosted Steering Committee implementation review meeting in August to review the Bench project.	
Three coordination meetings held with Wyoming Game and Fish Department with aquatics/wildlife focus.	
Clear Crazy DMTS project – motorized trail designation, loop trail construction, old road closure with State Trails, RMEF, Wyoming Game and Fish.	
Johnson County Hazardous Fuels Mitigation Commission formed in 2006 with Forest as a partner to address concerns with residential development adjacent to Forest.	
District coordination with Montana Conservation Corps, WY State Trails, International Mountain Biking Association, and local bike groups on Bench Trail improvements.	
District coordination with Shoshone Back Country Horsemen on trail maintenance on the Bucking Mule National Recreation Trail and Battle Park area trails.	
District and BLM on travel management planning in the Mexican Hill area.	
District coordination with Big Horn County and local Chambers of Commerce on the Bench Trail reconstruction project.	
Ongoing District coordination/agreements with Cloud Peak Backcountry Horsemen on trail maintenance and facility upkeep at Elgin Park Trailhead. The group contributed 300+ hours in 2006.	
Cloud Peak Chapter Wilderness Watch completed the wilderness campsite monitoring in the summer 2006. The group volunteered over 800+ hours to volunteer wilderness patrols, monitoring and trail maintenance projects.	
Powder Pass Nordic Ski and Snowshoe completed its first winter of volunteer efforts on nordic ski areas. The volunteers donated over 200+ hours to trail marking, clearing and packing projects.	
Volunteers provided over 5,000 hours to the management of the Powder River District efforts in 2006.	

Monitoring Driver	Monitoring Question
<b>4. Objective 3a Potential Monitoring Item #1</b>	<b>Is the Bighorn National Forest assisting in building the capacity of Tribal governments, rural communities and private landowners to adapt to economic, environmental, and social change related to natural resources.</b>
<p>An interagency agreement with the Crow Tribe was established to provide economic opportunity for crew work and conduct needed thinning of timber resources on the Forest.</p>	
<p>The Forest continued to support Ft. Washakie interagency helicopter program through an agreement for fire suppression.</p>	
<b>Potential Monitoring Item #2</b>	
<p>Fuels/Fire coordination meetings with all 4 counties for fire suppression coordination. Johnson County Fuels Mitigation committee formed to address private and Forest (WUI) hazardous fuels concerns.</p> <p>Continued joint implementation of the Story Fuels project with county, state, and Forest programs combined, achieving 200 acres of prescribed burning on Forest, with county completing other private land activities through USFS grant.</p> <p>Bench project implementation has reduced Shell Canyon summer home owners risk of wildfire potential.</p> <p>Continued coordination with Canyon Creek estates in developing the Southwest Fuels project to treat hazardous fuels, with private land treated through USFS grant.</p>	
<b>10. NFMA Species Viability Objective 1b, Strategies 5-11</b>	<b>Are the habitat trends (and therefore population trends by inference) for MIS and other emphasis species being maintained or improved with respect to management activities conducted?</b>
<p>The Forest hosted the statewide and Forest-specific avian monitoring program (in association with the Rocky Mountain Bird Observatory) by handling all contract administration details on behalf of other Forests in Wyoming. This was the fifth and final year of this contract to establish baseline trends. At the time of this report, a final report was not available. As such population trends and habitat condition remaining similar to those reported in the Revised Forest Plan FEIS, pages 3-215 to 3-239. The results of the report will be included in the 2007 Monitoring and Evaluation Report.</p>	