

# FY 2010 Monitoring and Evaluation Report

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## Monitoring Results

The following table takes the monitoring items from chapter 4 of the revised forest plan and lists them by the resource areas to which they apply. Effectiveness, implementation, and validation monitoring items are described for each resource. In doing this, the numbering system derived for the forest plan is out of sequence.

Text highlighted in grey indicates administrative changes to monitoring questions or monitoring frequency. This 2010 monitoring report makes these changes final, and they become a part of the forest plan.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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.  Monitor annually	<p>The forest completed 77 environmental analyses between 2006 and 2010. One was an environmental impact statement (EIS), 14 were environmental assessments (EA), and 61 were categorically excluded from documentation (CEs). The majority of the analyses were conducted in response to recreation-based proposed actions.</p> <p>Two appeals (Piney and Battle Park-Misty Moon AMPs) and one litigation (Piney Creek) were processed. All appealed decisions were upheld and the court ruled in favor of the forest in the one litigation case.</p> <p>During FY 2010, the forest completed 17 environmental analysis documents. Of those, 13 have been implemented.</p> <p>2006 – best management practice (BMP) reviews on Bald Mountain timber sale, Riley Point timber sale, and Bench project in addition to BMP reviews for allotments in the N. Tongue drainage.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	General Discussion
1. NFMA; Multiple Goals, Objectives, Strategies, cont.			<p>2007 – four BMP reviews: Bald Mountain timber sale, Cold Springs timber sale, Muddy Cr. allotment, Shell Cr. allotment.</p> <p>2008 – BMP reviews of Trap, Highway, and Upper Woodchuck pastures.</p>
<p>Notes: Priority projects include prescribed fire, timber harvest, travel management and dispersed recreation, and livestock grazing (these are major revision or implementation topics).</p>			
2. Objective 2a, Strategy 8  Objective 4c, Strategy 4	How well is the Forest interacting and planning in cooperation with communities and local governments?	<p>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.  Monitor annually</p>	<p>Twenty-nine grants and agreements were maintained in FY 2010. See appendix A for a complete description of these coordination efforts.</p> <p>Meetings were conducted with the Wyoming State Trails staff, Rocky Mountain Nature Association, local Nordic ski clubs, local scout groups and Wilderness Watch groups.</p> <p>Two steering committee meetings were held: one in April and the other in August. See appendix A for a complete description of these meetings.</p>
3. Objective 2b	Are Wild and Scenic River candidate waters being managed for the desired conditions?	<p>Monitor the outstandingly remarkable values from the suitability/eligibility analysis.  Monitor every five years; due in 2010 and 2015</p>	<p>No projects implemented during the five-year monitoring period affected the wild and scenic values of the Little Horn River.</p> <p>Portions of twelve streams were inventoried. Eight streams were evaluated in an eligibility/suitability determination prepared for the forest plan.</p> <p>The outstandingly remarkable values of the five streams (Little Bighorn, Tongue, South Rock, Porcupine, and Paintrock) are largely unchanged in 2010. These streams were identified, considered for recommendation, and documented in appendix D of the forest plan EIS.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	General Discussion
3. Objective 2b, cont.			<p>A more recent but similar review for the BLM’s Washakie Resource Management Plan identified Medicine Lodge Creek and Paintrock Creek as eligible on public lands adjacent to the forest.</p> <p>Twenty-two acres of the Garden of the Gods prescribed fire (5/18/2009) occurred within the seen area of the Tongue River (Segment B – North Fork). During forest plan revision, this segment was inventoried as an eligible recreation river based on outstandingly remarkable values of scenery, fisheries, and recreation. The prescribed fires were primarily in grass, forb, and sagebrush vegetation and did not have long-term effects on the outstandingly remarkable values.</p>
4. Objective 3a	<p>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?</p>	<p>1. Summary of financial and technical assistance provided to local communities and natural resource based businesses to pursue self-sufficiency and sustainability.                      Monitor annually</p> <hr/> <p>2. Summary of Bighorn National Forest enhancement of communities’ capacities to reduce wildfire risk.                      Monitor annually</p>	<p>In FY 2010, the forest spent approximately \$210,000 on grants and agreements. Approximately sixty percent went to local communities and natural-resource-based businesses which allows them to be self-sufficient.</p> <p>American Recovery and Reinvestment Act (ARRA) funds were used to implement two projects that were awarded to regionally located businesses.</p> <p>The forest continued to support Fort Washakie interagency helicopter program through an agreement for fire suppression.</p>
			<p>The forest participated in meetings, with committees, and jointly implemented fuels reduction projects (see appendix A).</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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?	<p>1. Coordinate with Wyoming Department of Environmental Quality (WYDEQ) 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.</p> <p>Monitor annually</p>	<p>The water quality plan was developed in 2006 and has been implemented yearly since that date.</p> <p>The 2010 WYDEQ 305(b) and 303(d) integrated report lists the North Tongue River and Granite Creek. The 2010 report states, “The formal stakeholder involvement coupled with federal land management and allotment planning is considered equivalent to watershed planning, and the North Tongue River has been given a low priority for TMDL development.”</p>
		<p>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.</p> <p>Monitor every five years; due in 2010 and 2015.</p>	<p>This item has been completed and is reported under validation monitoring item #40.</p>
6. Objective 1a Strategy 2	Were watershed improvement projects completed?	<p>Summarize number and type of watershed improvement projects. Identify what percentage of the watershed or length of stream reach has been treated.</p> <p>Monitor annually</p>	<p>2010</p> <p>1) Channel bed material was placed in the Mill Creek road-stream crossing structure and willows were planted upstream and downstream of the crossing.</p> <p>2) Follow-up repairs and/or maintenance to the Boy Scout stream restoration project: bank repair, weir height adjustment of upstream of the E channel entrance, and a livestock enclosure installed.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Aquatics Discussion
6. Objective 1a Strategy 2, cont.			<p>3) Started relocation of the Hunter Corrals campground away from the riparian area on North Fork of Clear Creek.</p> <p>2006 – segments of 2 trails relocated, 2 trail segments abandoned. 3.4 miles in the S. Tongue watershed and 2.7 miles in the Middle Paintrock watershed.</p> <p>2007 – seven projects completed.</p> <p>1) Completed the Shutts Flat trail project. Improved approximately 1 mile of motorized trail. Fixed 3 water crossings, improved a wet meadow crossing, cleared trees. Road repair: fixed pot-holes, constructed rolling dips, rebuilt steep sections and installed 2 culverts.</p> <p>2) In Woodrock, approximately 1 mile of the Graves Creek Trail was repaired by improving crossings over wet areas and building the trail up to improve drainage. Wet areas were avoided by reconfiguring the trail to avoid Graves Lake.</p> <p>2009 – The Mill Creek road-stream crossing (FR-17) project (fish friendly) was installed. Boy Scout stream restoration project was completed.</p>
7. Objective 1a Strategy 3	Are disturbed sites being restored using the appropriate vegetation?	<p>Number of disturbed sites restored after consulting the Bighorn NF Revegation Guidebook.</p> <p>Monitor every five years; due 2010 and 2015.</p>	<p>The forest revegetation guidebook was completed in 2007 (<i>Revegetation Strategy for the Bighorn National Forest</i>, Matthew Spann, 2007).</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Aquatics Discussion
8. Objective 1a Strategies 4 – 7	Are aquatic habitat conditions being maintained for native plant, invertebrate and vertebrate riparian-dependent species?	<p>1. Summarize results of long-term, reach-level monitoring sites, including riparian vegetation.</p> <p>Monitor every five years; due 2010 and 2015.</p>	<p>Long-term, reach-level monitoring sites have been established. There are 34 total stream monitoring locations across the forest. The majority of them have been surveyed two times over the last five years.</p> <p>Two readings over a five-year period does not allow us to detect any type of trend because growth rates are too slow. This monitoring item will be more telling in 2015.</p>
		<p>2. Summarize results of habitat improvement projects (acres/miles) by watershed.</p> <p>Monitor annually.</p>	<p>One streambank revegetation project was completed in 2010 in cooperation with Trout Unlimited. It benefitted approximately ½ mile of the North Tongue River, a popular trout fishery.</p>
		<p>3. How many riparian acres are meeting or moving toward desired conditions?</p> <p>Monitor every 5 years; due 2010 and 2015.</p>	Undetermined
		<p>4. How many riparian acres are not meeting or moving toward desired condition?</p> <p>Monitor every 5 years; due 2010 and 2015.</p>	Undetermined
		<p>5. How many acres of riparian are undetermined?</p> <p>Monitor every 5 years; due 2010 and 2015.</p>	Undetermined

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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	In FY 2010, BMP reviews were conducted at five locations. Results of these reviews are located at the Bighorn National Forest supervisor's office in Sheridan, Wyoming.  Sick Pasture in the Dry Tensleep allotment  High Park Pasture in the North Canyon Allotment  Owen Creek Sheep Trap pasture in the Owen Creek Allotment  PK Horse in the Lower East Tongue Allotment  Upper Cold Springs pasture in the Forks Allotment.

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	Monitoring Items and Frequency	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	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	Monitoring Items and Frequency	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.  Monitor annually	One new rangewide conservation strategy and an associated conservation agreement were developed for the Yellowstone cutthroat trout in 2010.
		2. Acres/miles of species at risk habitat restored or improved by Forest Service management or permitted activities.  Monitor annually	Willow planting to stabilize streambanks and placement of large boulders within a road crossing culvert to improve fish passage benefitted one mile (~40 acres) of native Yellowstone cutthroat trout habitat in Mill Creek.  In cooperation with the Wyoming Game and Fish Department (WGFD), non-native fishes were removed from eight miles of Soldier Creek, two miles of South Fork Paintrock Creek, and twelve miles of the Little Tongue River to prepare these drainages for reintroduction of native Yellowstone cutthroat trout. Yellowstone cutthroat trout were reintroduced to four miles of Buckskin Ed Creek.  West Zone:  Five hundred and thirty acres of habitat were improved for a variety of wildlife species through the use of prescribed fire and mechanical treatment of aspen stands to remove encroaching conifers.  Twenty-four livestock exclosures were maintained to protect riparian habitats for a variety of wildlife species.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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, cont.		2., cont.	East Zone:  Three hundred acres of burning in ponderosa pine in French Creek drainage benefitted a variety of wildlife.  12.3 acres of aspen enhancement (conifer removal). 6.6 acres of meadow enhancement (conifer removal).  Two hundred and eighty acres of livestock and/or wildlife exclosures were maintained.
		3. Acres/miles of species at risk potential habitat inventoried and number of populations discovered.  Monitor annually	Oreohelix snails – fifteen sites (~five acres per site or 75 acres total) were visually surveyed to collect samples for a genetic study.  West Zone:  20.38 miles of potential water vole habitat was surveyed.  Eight sites were surveyed for amphibians.  Extensive monitoring of two bighorn sheep herds in collaboration with the WGFD.  Twenty-nine owl nest boxes were surveyed.  Six sites were surveyed for goshawks.  Two sites were surveyed for the presence of peregrine falcons.  East Zone:  Amphibians – 1,500 acres surveyed.
		4. Acres/miles of species at risk occupied habitat and/or populations discovered.  Monitor annually	Oreohelix snails – Thirteen of the fifteen sites were occupied by at least one species (65 acres).  Amphibians – two new populations of Columbia spotted frog discovered (awaiting reports from WGFD and Truman State University that may document additional populations).

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Wildlife Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
<p>9. NFMA Species Viability</p> <p>Objective 1b Strategies 1–5, cont.</p>		<p>4., cont.</p>	<p>Two new plants species were discovered: <i>Drosera anglica</i> and <i>Botrychium pseudomontanum</i>.</p> <p>Medicine Wheel/Paintrock district biologist confirmed a goshawk east of Meadowlark Lake and north of Bull Creek from Hwy 16 in July 2010. A nest site was not located, but the goshawk was seen again one week later. The biologist also confirmed a goshawk off the Dayton Gulch road in Section 35 north of Little Bald Mountain. The bird perched east of the road. The goshawk was not seen again on two subsequent trips nor was it detected during one calling session.</p>
		<p>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.</p> <p>Monitor every five years; due in 2010 and 2015.</p>	<p>As the forest is not occupied by lynx, this monitoring is not completed annually. The forest's lynx habitat determination was updated in 2007 following regional protocol. This vegetation database would be reassessed should the forest become occupied by lynx.</p>
		<p>6. Number of species or habitat monitoring programs established or implemented, including cave management and Research Natural Area (RNA) management plans.</p> <p>Monitor annually</p>	<p>Three new cave management plans were developed FY 2010.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Wildlife Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
9. Objective 1b Strategies 1–5, cont.		7. This is now a summary item for Monitoring Drivers 9 and 10. The number is being retained to avoid renumbering subsequent monitoring items.	
		8. Number of acres of demand species habitat improvement include big game winter range.  Monitor every five years; due in 2010 and 2015	The prescribed burning, aspen treatment, meadow encroachment treatment, and exclosure maintenance (described above for species at risk) benefitted demand species such as elk and moose. Streambank revegetation completed in cooperation with Trout Unlimited benefitted approximately ½ mile (~20 acres) of the North Tongue River.
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 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).  Monitor every five years; due in 2010 and 2015.  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 2010 and 2015.	The forest participated in the statewide avian and red squirrel monitoring program in association with the Rocky Mountain Bird Observatory. Data from that monitoring does not indicate any population trend changes attributable to Forest Service management activities.  The results of aerial beaver cache surveys and reintroduction efforts were summarized in a recent project completion report (WGFD Agreement # 09-CS-11020200-011).  In general, long-term trend data for the east slope of the forest shows a decrease in beaver distribution and abundance, particularly south of Piney Creek. This decline may be associated to declining willow health and vigor.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Wildlife Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
<p>10. NFMA Species Viability</p> <p>Objective 1b, Strategies 5-11, cont.</p>		<p>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.</p> <p>Monitor every five years; due in 2010 and 2015.</p>	<p>The intent of forest plan strategy 6 (objective 1b) was to have no net loss of elk security habitat (percent of potential) at the forestwide scale. Overall, the forest is likely at the same level of elk security as when the forest plan was finalized in 2005.</p> <p>Discrepancies in the security habitat model cause it to estimate an increase in elk security habitat; however, this may not be the case on the ground. In places where natural disturbances occurred, there was a loss within a watershed. In the Woodrock and Babione projects, some new roads were created for a timber sale project, but some existing motorized routes were closed resulting in no change in elk security.</p>
		<p>4. Continued habitat use by bats at known occupied caves. Cave roost surveys and other methods.</p> <p>Monitor every five years; due in 2010 and 2015.</p>	<p>West Zone:</p> <p>In 2008/2009, extensive bat surveys were conducted in Cottonwood Canyon, Spanish Point, the Ice Cave, and caves in the Little Horn area of the Big 6 AMP, Tensleep AMP, and Beaver Creek AMP project areas. Bat use was confirmed by the presence of guano at a variety of locations.</p> <p>East Zone:</p> <p>Three caves were surveyed for continued use by bats in cooperation with the WGFD. One cave was occupied by small-footed myotis, Townsend's big-eared bat, big brown bat, little brown myotis, and two unknown myotis species. A second cave was occupied by little brown myotis, and the third cave was unoccupied.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Wildlife Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
10. NFMA Species Viability  Objective 1b, Strategies 5-11, cont.		5. Continued habitat use by goshawks in known nesting territories where active vegetation management has occurred. Verification through nest search with broadcast calls.  Monitor every five years; due in 2010 and 2015.	West Zone:  The Shell Bench historic goshawk nest site was surveyed two times in July; goshawks were not detected. This is most likely due to the beetle kill in the small timber stand that was left after the timber harvest.  In 2010, three goshawks were detected at previously documented, historic nest sites: Bucking Mule site, behind Porcupine Ranger Station, and between North and South Park by Spanish Point. No nests were located. This is similar to survey results in 2008 and 2009; however, five goshawks were detected in these areas in 2009.  The Forest was also surveyed for goshawks in association with the regional goshawk monitoring protocol, completed by the Rocky Mountain Bird Observatory (RMBO).
		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.	West Zone:  Surveys results (mostly visual surveys) indicated continued habitat use. Live trapping methods have not been very effective to document presence or absence.
		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: 2007, 2009, 2011, 2013, 2015.	2009, West Zone – Snow track surveys were conducted from Antelope Butte to Big Goose and from Porcupine to Burgess Junction. Five coyotes and 6 areas of abundance of hare were noted. 2006-2008 had much higher samples and more diversity than 2009.  There were no reported observations of lynx on the forest nor have there been since the forest plan was revised in 2005.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Wildlife Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
<p>10. NFMA Species Viability</p> <p>Objective 1b, Strategies 5-11, cont.</p>		<p>8. Continued habitat use by amphibians in known locations. Number of reintroductions or expansions of range in stream reaches.</p> <p>Monitor every five years; due in 2010 and 2015.</p>	<p>West Zone:</p> <p>Amphibian use of historic sites by appears continuous.</p> <p>East Zone:</p> <p>Columbia spotted frog habitat use at known breeding locations appears continuous.</p> <p>Extensive amphibian surveys have been conducted by the WGFD, as documented in the Wyoming Natural Diversity Database (WYNDD) and by Truman State University personnel (final reports pending).</p>
		<p>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.</p> <p>Monitoring for rainbow trout will be done every five years (2010 and 2015) – the same schedule as the rest of the MIS.</p>	<p>Rainbow trout were monitored at 13 sites in collaboration with the Wyoming Game and Fish Department. Results indicate that populations are generally being maintained but continue to fluctuate. In some cases, populations have declined in response to fisheries management actions such as stocking different species. In several sites on the North Tongue River, the total number of rainbow trout has declined, but their average size has increased. This suggests that habitat is being improved for adult rainbow trout at these sites.</p>
		<p>10. Continued habitat use by raptor and other rare avian species where known nest locations occur. Nest searches and expanded inventories.</p> <p>Monitor every 10 years; due in 2015.</p>	
<p>9 &amp; 10 NFMA Species Viability</p> <p>Objective 1b,</p>		<p>11. Summarize species-specific monitoring results.</p> <p>Reporting frequency varies by monitoring</p>	<p>Since the plan went into effect in FY 2006, several species assessments have been completed, species inventory and monitoring has been conducted,</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Wildlife Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
Strategies 1 through 11		protocol. Monitor every five years; due in 2010 and 2015.	and biological evaluation findings have been made for project decisions. Based on the information from those efforts, the forest has not identified viability concerns at the forestwide scale.  Refer to <i>Attachment B – Management Indicator Species Supplemental Report</i> for more information.

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.

<b>Validation Monitoring- Are the desired conditions, objectives, and assumptions made in the Forest Plan correct?</b>			
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 in 2015.	
		2. Compare existing status to previous status by species.  Monitor every 10 years; due in 2015.	
		3. Validate appropriateness of MIS selected, and the management direction associated with them (e.g., elk security).  Monitor every 10 years; due in 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 (ASQ, AUMs, POATs, etc) are achievable while still meeting habitat desired conditions, standards, and guidelines. Determine if there were significant changes in elk security habitat. Determine if improvements were made in presence/absence or distribution for species for which little information is known.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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 forest 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.  Monitor every 5 years; due in 2010 and 2015.	Table 1 (see below) summarizes acres treated and estimated for treatment since the forest plan was implemented. Differences of note include the harvest of 42% of the acres estimated, and of those acres, most were in the salvage/sanitation and shelterwood overstory removal category. The forest plan estimated that most of the acres would be coming from uneven-aged selection and clearcutting.

Table 1. Estimated and actual acres treated by vegetation treatment type. All units are in acres.

	Clearcut	Shelterwood Prep Cut	Shelterwood Seed Cut	Shelterwood Overstory Removal	Uneven-aged Selection	Intermediate Harvest	Salvage Sanitation	Total Acres	Total of ASQ Acres
ASQ (2005 forest plan projection)	691	82	82	82	764	0	0	1,701	1,701
2005	0	0	0	0	0	0	941	941	0
2006	394			279	149		55	877	877
2007	0	0	0	0	0	0	100	100	100
2008	0	0	0	302	0	0	587	889	889
2009	0	0	0	0	0	0	0	0	0
2010	53	33	25	613	0	707	82	1,513	580
Total output	447	33	25	1,194	149	707	1,765	4,320	4,320
Total projected ASQ output	4,146	410	410	492	4,584	0	0	10,206	10,206
% of projected ASQ	11%	8%	6%	243%	3%			42%	24%

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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, cont.		2. Review vegetation treatments to see if they mimic the scale and effect of natural processes.  Monitor every 5 years; due in 2010 and 2015.	<p>Vegetation treatments conducted since 2005 have not been large enough to mimic natural processes. Vegetation treatments that mimic natural processes include prescribed fire and clearcutting.</p> <p>The forest accomplished about 5,739 acres of prescribed fire in the past five years</p> <p>18,593 acres have been affected by wildfire. The largest wildfire was in 2007: 18,460 acres. Over the last 5 years, the majority of the wildfires were less than 200 acres.</p> <p>Natural processes other than wildfire that have occurred include blowdown and insect and disease mortality. Those acres combined were 14,930. The insect and disease mortality was mainly caused by the Douglas-fir beetle in the Douglas-fir. Mountain pine beetle has affected limber pine stands that are stressed from the white pine blister rust.</p> <p>While annually there is some blowdown, only the 2007 Garland Blowdown reached much size (500 acres).</p>
3. Deleted; duplicate of #12			
		4. Summarize acres of aspen treated. Summarize efforts and results of inventory/monitoring for condition of stands.  Monitor every 5 years; due in 2010 and 2015.	<p>From 2006 to 2010, 518 acres of aspen were treated, primarily by removing conifer encroachment from aspen stands. The forest plan projected 500 acres of maintenance and regeneration over ten years.</p> <p>Aspen regeneration treatments were not done because of the high cost of fencing out ungulates to reduce browsing.</p>

	Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Fire and Timber Discussion
11.	Objective 1c Strategies 1 – 7, cont.		<p>5. Identify location and amount of old growth and compare to desired amounts. Update vegetation coverage in GIS.</p> <p>Monitor every 10 years; due in 2015.</p>	
			<p>6. Summary of control measures for insect/disease outbreaks in high value* areas (acres treated).</p> <p>Monitor every 3 years; due in 2008, 2011, 2014.</p>	<p>The forest put out gypsy moth and Lindgren funnel traps to detect infestations. There was no indication of outbreaks in high-value areas.</p> <p>Anti-aggregative pheromones were used in and around Shell Fall Visitor Center to successfully repel the Douglas fir bark beetle to keep live Douglas fir trees on the site.</p>
			<p>* The forest plan defines high value areas as campgrounds, summer homes, lodges and other developed facilities (silviculture guideline #7).</p>	
			<p>7. Summarize insect/disease treatments, and compare to aerial inventory of insect/disease occurrences and extent to determine effectiveness.</p> <p>Monitor every 3 years; due in 2008, 2011, 2014.</p>	<p>The forest has utilized clearcut harvesting to remove stands infected with mistletoe and Comandra and western gall rusts. Since 2005, 447 acres were clearcut.</p> <p>Since 2005, the forest has reduced stand density on 19,349 acres. This thinning reduces competition among the remaining trees and increases their vigor and resistance to insects and disease.</p>
			<p>8. Summary of wildland fire interagency relationships maintained, fostered or improved. Summary of firefighter and public safety based on these actions.</p> <p>Monitor annually</p>	<p>In 2010, the forest participated in the Cody Interagency Dispatch Center advisory committee and supported positions in the Cody dispatch office.</p> <p>The forest provided instructors for the Johnson County fire school and hosted other training open to agency and public partners.</p>

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Fire and Timber Discussion</b>
11.	Objective 1c Strategies 1 – 7, cont.		8., cont.	There were no significant safety-related issues (public or firefighter) due in part to the slower-than-average fire season in 2010.
			9. Acres of fuel reduction accomplished in Fire Regimes I, II, and III.  Monitor annually.	The forest accomplished 10,498 acres of fuel reduction in 2010.
			10. Number of wildland fire use plans completed.  Number of acres treated.  Monitor annually.	Change in Forest Service policy in 2009 resulted in no distinction between wildfire managed for resource objectives and full suppression – both are wildland fires. This eliminates the need for wildland fire use plans and for reporting acres treated.

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

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 and 2015.	Tree thinning is used as a surrogate to measure this monitoring item. The results of the treatments have been mixed. The Douglas-fir bark beetle populations were so high that tree harvest did not deter the infestation. The spruce bark beetle treatment was more effective because the infestation was more isolated.  The 2001 Roadless Rule boundary has impacted the forests' ability to manage insect/disease within the Douglas-fir and spruce cover types because tree cutting is not allowed unless Regional Office and/or Washington Office agreement for entry is obtained.
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	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Fire and Timber Discussion</b>
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	Monitoring Items and Frequency	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.	<p>Seventy-five percent of the timber volume sold on the forest is through stewardship contracts. Direct contracting has also been used, but product removal is not included with direct contracts.</p> <p>Local communities benefit from stewardship contracts because fuels are treated in areas identified in community wildfire protection plans, skilled woods workers are employed, and local companies keep skills and tools available for use in the future, while providing economic stimulus to the local community.</p> <p>In the current lumber market, stewardship contracts expend more funds than they bring in. Management of the contracts still occurs and money continues to get to the communities; however, forest funds to accomplish this work have been reduced.</p> <p>In 2010, forest employees received regional and national awards for their work on stewardship contracting.</p>
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?	<p>Forest product outputs in CCF and approximate MMBF, including:</p> <ul style="list-style-type: none"> <li>Sawtimber (7" +)</li> <li>Roundwood (5-6.9"),</li> <li>personal use fuelwood, other</li> <li>vegetation management</li> <li>Allowable sale quantity</li> <li>Christmas trees</li> <li>Special forest products</li> </ul> <p>Monitor annually</p>	<p>Tables 2 and 3 compare the volume, by product, sold each year to the projected amount, for both the allowable sale quantity (ASQ) and the total sale program quantity (TSPQ). Table 2 reports in units of CCF; table 3 reports in MMBF. Table 4 compares sales of Christmas trees and special forest products with forest plan predictions.</p> <p>Items of note include the forest selling 120% of the TSPQ volume to date, with 115% of the sawtimber and 105% of the roundwood, by cubic measure (see table 2).</p>

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Timber Discussion</b>
29.	Objective 2c  Timber Strategies 1, 2, 3, cont.			<p>The largest discrepancy between TSPQ and actual sell is in the other vegetation management (OVM) volume, where 174% of the projected amount was sold (see table 2). This is partly due to the emphasis on treatments in WUI areas, as the forest plan did not include much of the wildland urban interface in the lands suitable for timber production (ASQ producing lands). In addition, some of the planned harvest acres have been unavailable to tree cutting due to annual restrictions in areas designated as roadless by the 2001 Roadless Area Conservation Rule (RACR). These two factors have resulted in more volume being removed than planned from lands not designated as suitable for timber production in the forest plan.</p> <p>The Bighorn timber market has changed since the forest plan was written. Lumber prices and demand are down to levels not seen since the late 1930s. Wyoming Sawmills Inc. (formerly in Sheridan) is no longer in business; this leaves the forest with one major sawmill with volume under contract: RY Timber in Livingston Montana.</p> <p>The forest was able to utilize American Recovery and Reinvestment Act (ARRA or stimulus) funds to help with fuels treatment in 2010. Without these subsidies, future sawtimber sales may be tenuous. Local fuelwood sales have picked up as the sawtimber market has weakened.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Timber Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
Notes: The Revised Plan projected the following outputs annually:		CCF = 100 cubic feet MMBF = million board feet	
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)			
<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 2. Timber output compared to forest plan projections. All units in 100 cubic feet (CCF).

Activity	Total Volume Sold	Sawtimber Volume (7"+)	POL (Live 5" to 6.5")	Mortality (dead) Volume	OVM Volume
Annual ASQ forest plan projection	27,183	23,467	3,716	NA	NA
Annual TSPQ forest plan projection	18,931	10,688	1,693	3,000	3,550
2005	42,396	19,898	400	2,200	19,898
2006	18,172	15,200	442	2,432	99
2007	15,935	6,877	353	2,105	6,598
2008	21,982	17,789	1,500	1,340	1,354
2009	3,837	84	483	3,205	64
2010	33,568	13,942	7,496	3,070	9,060
Total actual output	135,888	73,790	10,674	14,352	37,072
Total projected ASQ output	163,098	140,802	22,296	NA	NA

Activity	Total Volume Sold	Sawtimber Volume (7"+)	POL (Live 5" to 6.5")	Mortality (dead) Volume	OVM Volume
Total projected TSPQ output	113,568	64,128	10,158	18,000	21,300
% of projected ASQ	83%	52%	48%	NA	NA
% of projected TSPQ	120%	115%	105%	80%	174%
ASQ = sawtimber + POL from suited lands. Mortality (dead) = personal use firewood. TSPQ = sawtimber + POL + Mortality + OVM from both suited and nonsuited lands.					

Table 3. Timber output compared to forest plan projections. All units in million board-feet (MMBF).

Activity	Total Volume Equivalent	Sawtimber volume (7"+)	POL (Live 5" to 6.9")	Mortality (dead) Volume	OVM Volume
Annual ASQ forest plan projection	9.8	9.8	1.3	NA	NA
Annual TSPQ forest plan projection	7.3	3.9	0.2	1.5	1.3
2005	11.1	9.8	0.2	0.4	1.1
2006	8.2	6.9	0.2	0.4	1.2
2007	4.6	3.4	0.1	0.4	1.1
2008	10.7	9.3	0.6	1.5	0.8
2009	1.8	<1	0.2	0.5	1.6
2010	11.4	6.5	3.4	7.5	1.5
Total actual output	47.8	35.8	4.7	10.7	7.3
Total projected ASQ output	58.8	85.8	8.0	NA	NA
Total projected TSPQ output	43.8	23.4	1.3	9.0	7.8
% of projected ASQ	81%	61%	58%	NA	NA
% of projected TSPQ	109%	153%	370%	119%	93%

Table 4. Christmas tree and special forest products output compared to forest plan predictions.

<b>Activity</b>	<b>Christmas Trees (each tree)</b>	<b>Special Forest Products (permits)</b>
Annual TSPQ forest plan projection	2,100	3,000
2005	1,699	2,713
2006	2,012	2,976
2007	1,845	2,820
2008	5,787	10,103
2009	1,946	3,066
2010	2,054	3,328
Total actual output	15,343	25,006
Total projected TSPQ output	12,600	18,000
% of projected TSPQ	122%	139%

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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 Every 5 years; due in 2010, 2015.	We treated 2,691 acres of noxious weeds 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. Every 5 years; due in 2010 and 2015.	33 acres leafy spurge 16 acres yellow toadflax 75 acres ox-eye daisy 21 acres hoary cress 78 acres spotted knapweed
	How many acres of priority noxious weeds have been treated this year by what means?	Acres of priority weeds and method(s) Monitor annually	120 acres were treated in 2010 using mechanical and chemical methods. A change in regional direction for treatment acres accounts for the increase in acres from previous years.
	How many total acres of noxious weeds have been treated this year?	Acres of noxious weeds Monitor annually	1,509 total acres were treated in 2010. A change in regional direction for treatment acres accounts for the increase in acres from previous years.
	What prevention activities and cooperative efforts have been implemented during the past year?	Narrative description Monitor annually	The primary method of treatment is through cooperative agreements with Big Horn, Johnson, and Washakie counties

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Invasive Species Discussion</b>
12.	Objective 1.c, Invasive Species Strategy 2, cont.		Narrative description, cont.	<p>Educational programs presented to seasonal crews have increased weed awareness and have resulted in identification of new noxious weeds populations and follow-up treatment. Noxious weed prevention and control is considered in NEPA projects on the forest, including timber harvest, grazing activities, and dispersed and developed recreation.</p> <p>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. Weed seed is probably dropping off the undercarriages of the vehicles.</p> <p>The weed-seed-free feed program continues to be monitored and compliance by forest users in general is very good. In Johnson County, wilderness rangers and volunteers are monitoring and treating ox-eye daisy near the Cloud Peak Wilderness in the Circle Park Trailhead area.</p> <p>Big Horn County Weed and Pest and the MWPR district have cooperatively applied for State and Private Forestry funding annually. In 2010, \$20,000 was received and was used for treatment and inventory.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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 and 2015.	Dispersed sites were monitored in three watersheds (Clear Creek, Goose, and Shell) in 2002 and in 2010. 1,065 sites were monitored in 2002; 644 sites were monitored in 2010. The apparent decrease in the dispersed sites is likely the result of changing the inventory method rather than an actual reduction in the number of sites.  One consistent finding between the two survey years is that the majority of dispersed camping is occurring along three Forest Service roads (FSRs); FSR 271 (Shell), FSR 23 (Clear Creek), and FSR 293 (Goose). The sites along these routes ranked high for disturbance both years.
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 and 2015.	Implementation of the recreation facility analysis began in 2009. Accomplishments include installation of nine new campground toilets and rehabilitation of eight campground wells and pumps forestwide.
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 and 2015.	Field- and web-based public surveys were conducted regarding future management and use of the West Tensleep corridor on the Powder River Ranger District.  The Shell Racing Team (SRT) continues to express interest in developing mountain bike trails at the Nordic ski areas for summer use. They have also brought a proposal to the MWPR District for construction of loop trails along the Shell/Bench Trail #184.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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		Narrative description, cont.	<p>The annual average occupancy rate for all campgrounds on the Bighorn NF for May – September 2010 was 44%, which was 1% lower than 2009. The highest occupancy rates were at Lower Paintrock CG (83%), Middle Fork CG (82%) and Sibley Lake CG (72%). In July 2010, Middle Fork CG averaged 102% and Sibley Lake CG averaged 101%. In August 2010, Lower Paintrock CG averaged 135% and Middle Fork CG averaged 100%.</p> <p>If the occupancy rate was 100% with documented requests for more locations, the forest could reassess the recreation facilities analysis. However, even if the public wants more developed campground spaces; the funding is not available to maintain additional facilities or structures.</p>
16. Objective 2a Strategy 3	To what extent were vegetation management plans written for developed recreation sites?	<p>Number of vegetation management plans for developed sites and condition of the resource in developed sites.</p> <p>Monitor every 5 years; due in 2010 and 2015.</p>	Vegetation monitoring for the Medicine Wheel National Historic Landmark, utilizing permanent plots and photo points, was completed pursuant to the Medicine Wheel Historic Preservation Plan.
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> <p>Monitor every 3 years; due in 2008, 2011, 2014.</p>	
		<p>2. Number of travel management plans completed.</p> <p>Monitor annually</p>	Implementation continued on two existing plans (Hunt Mountain and Clear/Crazy).

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Recreation Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>			
17. Objective 2a, Strategies 5, 6, 9, 10, and 12 Objective 4a, Strategy 1		3. Scenic byway day use trail completed.  Monitor every 5 years; due in 2010 and 2015	NEPA analysis has been initiated for the Meadowlark Lake day use trail.
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	Seven presentations/activities with approximately 301 total participants.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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 2010 and 2015.  The forest has found that a five-year reporting period is not a long enough time frame. A ten-year reporting period will better answer the question.	
	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 and 2015.	Recruitment of dead and down woody material is on a 100- to 300-year time frame. Monitoring at less than every 20 years would most likely not show any significant trend.
	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 – See Appendix A for this monitoring item.  Law enforcement contacts are also reported in Appendix A.
	Are special exceptions affecting the wilderness resource?	Report the number and type of special exceptions to limited activities  Monitor annually	
Notes: Monitoring may indicate if a limited permit system or other restrictions are necessary.			

	Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Wilderness Discussion
<b>Effectiveness Monitoring – Are desired conditions and outcomes of the Forest Plan being met?</b>				
19.	Objective 2b Wilderness Strategy 1	Is air and water quality being improved, maintained or degraded in the Cloud Peak Wilderness, and on the Forest as a whole?	<p>1. Coordinate collection and analysis of IMPROVE<sup>1</sup> data (or subsequent protocols) on air quality. Monitor annually</p> <hr/> <p>2. Collect and analyze alpine lake water samples for information on air and water quality. Apply quality assurance protocol. Monitor annually</p> <hr/> <p>3. Review state air quality data for incidences of impairment in relation to Forest activities. Monitor annually</p> <hr/> <p>4. Prepare summary of annual compliance and identify needed improvements. Monitor annually.</p>	<p>WYDEQ continues to operate an IMPROVE visibility monitoring station near Cloud Peak Wilderness. This is used in monitoring the energy development occurring in the Powder River Basin and its impacts on air quality in the Cloud Peak Wilderness.</p> <hr/> <p>The long-term lake sampling work continued in 2010. Emerald Lake and Florence Lake were sampled three times. Quality assurance is conducted by the Rocky Mountain Research Station in Fort Collins, CO.</p> <hr/> <p>State air quality data did not report impairment in 2010.</p>
20.	This Monitoring Driver was a duplicate of #18. The number has been retained to avoid renumbering all subsequent monitoring drivers.			

<sup>1</sup> Interagency Monitoring of Protected Visual Environments (IMPROVE)

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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?	1. Number and types of agreements in place.  Monitor every two years; due in 2007, 2009, 2011, 2013, 2015	Two programmatic agreements (PAs) are in place: 1) A comprehensive programmatic agreement with the Wyoming State Historic Preservation Office (SHPO) and 2) Medicine Wheel Historic Preservation Plan (HPP).
		2. Identify other program needs and reduce backlog.  Monitor every two years; due in 2007, 2009, 2011, 2013, 2015	1) Historic structures are being managed according to the forestwide PA.  2) A historic context for recreation residence cabins is being developed in partnership with SHPO to resolve backlog of evaluations.  3) There is a significant backlog in the heritage module of INFRA. The forest is working with an enterprise team to reduce backlog over next two years.
		3. Summarize if terms of agreements are being met.  Monitor annually	2010 – The terms of both current agreements are being met.
22. Objective 2b Heritage Strategy 2	Is the Bighorn National Forest preparing and implementing Historic Preservation Plans?	Number of plans completed and implemented.  Monitor annually	One plan completed and implemented.  Medicine Wheel HPP: Monitoring meetings were held with the consulting parties in July and August at the Medicine Wheel and the winter consultaiton meeting was held in Billings, Montana.  In November 2010, the updated Medicine Wheel National Historic Landmark (NHL) nomination was successfully submitted and approved by the National Park Service NHL committee. The revised NHL nomination for the Medicine Wheel which includes the final NHL boundary and new archaeological and ethnographic data was completed in 2010 and received final approval from the Department of Interior in 2011.

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Heritage Resources Discussion</b>
23.	Objective 2b Heritage Strategy 3	What progress has the Forest made for inventorying areas having a high probability for heritage resources?	1. Acres inventoried. Monitor annually	Total acres inventoried in FY 2010 = 507  Cumulative acres inventoried since 2005 = 14,261
			2. Number of new sites evaluated. Monitor annually	Forest total = 43
			3. Number of backlogged, unevaluated sites that have been evaluated. Monitor annually	Forest total = 65
23.	Objective 2b, Heritage Strategy 3, cont.		4. Number of sites evaluated sent to the state National Register of Historic Places. Monitor annually	Forest total = 108
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	One site, Medicine Wheel NHL. Monitored an average of once a week for the summer season.
			2. Number of sites consulted on. Monitor annually	Forest total = 4
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	Forest total = 1

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Heritage Resources Discussion
		2. Number of heritage programs delivered.  Monitor annually	Six programs
		3. Number of interpretive signs or brochures constructed or maintained.  Monitor annually	Fifty-three interpretive signs; two brochures and one video.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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 annually	Cattle: 92,955 Sheep: 11,559 Horses: 909 Total = 105,423
	What total AUMs were authorized through term permit this grazing season?	AUMs authorized Monitor annually	Cattle: 72,590 Sheep: 6,904 Horses: 912 Total = 80,406
	What total acres of suitable rangeland are in active allotments?	Acres in allotments Monitor every five years; due in 2010 and 2015.	309,885
	Total number of active allotments (This includes temporary grazing in vacant allotments)	Number of allotments Monitor annually	77
	Number of active allotments monitored	Number of monitored allotments Monitor annually	59 This includes temporary grazing in vacant allotments; it does not include “active” allotments in total non-use.
	Percent of monitored allotment that exceeded forage utilization standards to the point of discussing/implementing actions to resolve the situation.	Percent of active allotments that were monitored Monitor annually	41%
	How many suitable acres are meeting or moving toward desired conditions?	Acres meeting or moving toward desired condition Monitor annually	120,858

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Livestock Grazing Discussion</b>
26.	Objective 2c Livestock Grazing  Strategies 1 and 2, cont.		Acres not meeting or moving toward desired conditions  Monitor annually	33,457
			Acres undetermined  Monitor annually	158,691
26A.	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  Monitor annually	See appendix A
26B.	Rangeland vegetation guideline 10, e and f (page 1-33 and 1-34)	Are existing levels of combined wildlife and livestock herbivory in key areas acceptable?	Sites monitored/sites where use was unacceptable  Narrative discussion.  Monitor every five years; due in 2010 and 2015	PRRD – 2 sites willow  Tongue - 6 sites willow  Joint monitoring with the WGFD and Powder River RD staff occurred for willow browse by moose. Levels of willow browse in Sourdough and Muddy Creek are heavy.  Joint monitoring of elk impacts on Battle Park occurred with WGFD and permittees where elk use is high. Mitigation was proposed in the form of a fence. Willow browse monitoring on the Tongue District is ongoing.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	Livestock Grazing Discussion
<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	Monitoring Items and Frequency	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	There have been no new paleontological sites identified.
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 plans of operation.  Monitor annually	2010: The Pascalite mining operation continued under their approved plan of operations near the headwaters of South Paintrock Creek on the Powder River Ranger District. The effects of the mining activities are consistent with the forest plan.  The Peaches lode claim in the Poison Cr. drainage operated according to the filed and approved plan of operations. The effects of the mining activities are consistent with the forest plan.  The NEPA analysis was completed for the first phase of the Hazelton Peak mining claim and a plan of operation was approved. The effects of the mining activities are expected to be consistent with the forest plan.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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.	<p>Five miles of the Bighorn Scenic Byway (U.S. Hwy 14) were widened and reconstructed with significant realignments by Wyoming Department of Transportation (WYDOT) from 2008 to 2010. This expanded views into the Little Tongue and Elephant Foot country for eastbound travelers. Familiar views of Steamboat Point and Tongue River Canyon changed. Regrading of the abandond road segments to develop natural appearing topography was successful. Seeding to revegetate cuts, fills and abandoned roadbed was completed in summer-fall 2010.</p> <p>South Fork Campground on the Cloud Peak Skyway (U.S. Hwy 16) was redeveloped in 2010.</p> <p>Shell Falls Wayside on the Bighorn Scenic Byway is being redeveloped with two projects: Phase 4 construction from 2007-2009 and Phase 5 construction initiated in 2009. Work was funded with a combination of a scenic byway grant (from WYDOT) and Forest Service capital improvement funds.</p> <p>Planning for the Johnson Creek vegetation management project was initiated in 2008 and is continuing. Much of the project is in the Management Area 4.2 along the Bighorn Scenic Byway. In addition to the typical shaded fuel breaks and shelterwood harvest prescriptions, uneven-aged management was identified to retain trees in areas with significant recreation investment.</p>

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Scenery Resources Discussion</b>
31.	Objective 2c Scenery Strategy 2	Are resource activities and forest uses consistent with the landscape character goals and scenic integrity objectives?	<p>1. Review a sample of management activities, and compare forest plan direction with actual outcomes. Monitor annually</p> <hr/> <p>2. Map and measure total acres and % of geographic area at each scenic integrity level. Monitor every 5 years; due in 2010 and 2015.</p> <hr/> <p>3. Map areas needing restoration and areas restored. Monitor every 5 years; due in 2010 and 2015.</p>	<p>Monitoring at the Bench project (heathy forest initiative in Shell Canyon) continues under a rehabilitation scenic integrity objective. Some firelines have been established but prescribed fire to reduce down trees and slash has not been completed. Most of this project is viewed from the Bighorn Scenic Byway.</p> <p>Monitoring of the use of a mower to treat sagebrush in Battle Park showed near 100% mortality, which creates strong lines dividing treated and untreated areas where the sagebrush is dense. Design of treatment areas before mowing is recommended to avoid negative impacts on scenery. Prescribed fire to soften edges after mowing may mitigate some negative visual impacts.</p> <hr/> <p>In 2009, areas where the inventoried scenic integrity level is below the forest plan scenic integrity objective were mapped. Twenty-four percent of the forest (approximately 269,360 acres) was inventoried with scenic integrity below the forest plan scenic integrity objective (SIO). These areas have an interim objective of rehabilitation. Priorities for rehabilitation have not been established (forest plan chapter 1, scenery management guideline 3).</p> <hr/> <p>For scenic integrity, the worst gap between existing conditions (very low scenic integrity) and desired conditions (forest plan objective of high scenic integrity) occurs on about 2,890 acres. This is based on GIS map analysis not field review.</p>

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Scenery Resources Discussion</b>
31.	Objective 2c Scenery Strategy 2, cont.		<p data-bbox="727 275 829 300">3., cont.</p> <hr/> <p data-bbox="727 638 935 877">4. Compose a narrative and photographic description of the area's landscape character and character changes.</p> <p data-bbox="727 898 951 982">Monitor every 5 years; due in 2010 and 2015.</p>	<p data-bbox="987 275 1403 604">These acres are in areas where historic harvest units have geometric edges or where the density of existing road, trail, fence, and/or utility patterns distract from the natural appearance of the landscape. While these areas have the biggest gap between existing and desired conditions, they may not be the highest priorities for rehabilitation.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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	<p>The 2001 Roadless Area Conservation Rule (RACR) remains under litigation, and the forest continues to adhere to current Washington Office direction regarding projects in roadless.</p> <p>Since 2005, seven projects have taken place in RACR areas, however the character, as defined in the 2001 rule, continues to be maintained. The projects are as follows: fuel management in WUI areas; three recreation projects and three special use projects.</p> <p>Between 2005 and 2010, part or all of sixteen prescribed fires burned in areas inventoried with roadless characteristics. Of the 497,400 inventoried roadless acres, 3,960 acres (0.8%) were treated.</p>

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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 forest road crews, contract, cooperators, or other means (See annual roads accomplishment report).  Monitor annually	The forest continues to annually maintain ninety to one hundred percent of level 3, 4, and 5 roads to standard. Twenty-five percent of level 1 and 2 roads are also maintained to standard. Ninety percent of road maintenance was accomplished by forest force account crews. Ten percent was accomplished by contract/agreements.  In 2010, ninety-eight percent (257 miles) of all level 3, 4, and 5 roads received full maintenance. Thirty-six percent (102 miles) of level 1 and 2 roads received full maintenance. The majority of the level 1 and 2 road maintenance was on the Tongue Ranger District.
34. Objective 4a Strategy 6	Are unclassified roads and trails being decommissioned?	Report road decommissioning accomplishments and trail decommissioning accomplishments performed via forest road crews, contract, cooperators, or other means (see annual roads accomplishment report).  Monitor annually	In 2010, the forest road crews decommissioned 2.8 miles of Forest Service roads and 2.7 miles of unauthorized roads. The majority of the decommissioning took place on the Tongue Ranger District and was in compliance with forest travel management NEPA decisions.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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 Facility Master Plan (FMP) and the Built Environment Image Guidelines (BEIG)  Monitor annually	The following facility/infrastructure improvement projects were accomplished in 2010: South Fork trailbridge. Lower Paintrock trailbridge. Two toilet facilities at South Fork Campground. One toilet at Cabin Creek Campground. Reconstruction of the Porcupine Ranger Station pumphouse and water systems.  These new projects reduced forest deferred maintenance backlog by \$379,000. All construction and reconstruction projects included <i>Facility Master Plan</i> recommendations and met <i>Built Environment Image Guide</i> guidelines.
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?	1. Summarize open road and motorized trail density by 5 <sup>th</sup> -level HUC watershed or results in roads analysis process.  Monitor every 5 years; due in 2010 and 2015	All units are in miles/square mile Big Goose Creek 0.4 (road), 0.1 (trail) Bighorn River-Little Dry Creek 0.4 (road) Lower Shell Creek 0.5 (road), 0.3 (trail) Upper Shell Creek 0.7 (road), 0.1 (trail) Lodge Grass Creek 0.4 (road) Upper Little Bighorn River 0.5 (road), 0.03 (trail) Porcupine Creek 0.8 (road) Bighorn R.-Five Springs Creek 0.7 (road) Tongue River-Fool Cr. 0.6 (road), 0.1 (trail) Rock Cr. 0.1 (road), 0.02 (trail)

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Facilities/Infrastructure Discussion</b>
36.	Objective 4a Strategies 1, 2, cont.		<p>1., cont.</p> <hr/> <p>2. Update GIS coverages when actions implemented.</p> <p>Monitor every 5 years; due in 2010 and 2015.</p>	<p>Upper Clear Creek 0.5 (road), 0.02 (trail)</p> <p>Paint Rock Creek 0.4 (road), 0.2 (trail)</p> <p>Piney Creek 0.1 (road), 0.4 (trail)</p> <p>Nowood River-Big Cottonwood Creek 1.8 (road)</p> <p>Tensleep Creek 0.6 (road), 0.01 (trail)</p> <p>N. Fork Crazy Woman Creek 1 (road), 0.1 (trail)</p> <p>N. Fork Powder River 0.6 (road)</p> <hr/> <p>This occurs yearly as shown in the forest GIS operating plan and as required by forest policy.</p>
37.	Objective 4a Strategy 11	How many miles of system or non-system road were decommissioned?	<p>Review annual engineering work accomplishment reporting</p> <p>Monitor annually</p>	<p>2.7 miles of non-system roads were decommissioned in 2010. Most of these were unauthorized, user-created routes on the Tongue Ranger District.</p>
<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?	<p>1. Monitor concerns from local counties and forest users.</p> <p>Monitor every 5 years; due in 2010 and 2015.</p>	<p>Of the 1,107,571 acres of national forest system lands on the Bighorn National Forest, approximately 150,000 have been identified as having inadequate public access. While the public often has verbal permission to access popular trails, landowners are hesitant to grant legal public access. Private landowners continue to ask for legal access across the forest to their private inholdings.</p>

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>	<b>Monitoring Items and Frequency</b>	<b>Facilities/Infrastructure Discussion</b>
38.	Objective 4b Strategy 1, cont.		1., cont.	<p>In 2005, Robert B. and Carol S. Berry granted a trail easement to the United States for the Soldier Creek Trail No. 15. Currently, the forest is negotiating two other trail rights-of-way (ROWs) through state and private lands.</p> <p>In September 2009, a private landowner placed a gate with a “No Trespassing” sign across Forest Service Road 506 at the eastern boundary of the private land. In 1989, the United States obtained a legal easement from the previous landowner. The easement granted perpetual access through the private land. However, the new landowner did not agree with the easement granted by the previous owner. The new landowner was asked to remove the gate in October 2009, and the gate was removed in the spring of 2010.</p>
			<p>2. Number and status of right-of-way acquisitions</p> <p>Monitor every 5 years; due in 2010 and 2015.</p>	<p>Since 2005, the forest has identified three ROWs that are needed to provide access. One has been granted and we are working on the other 2 with an expected completion date of 2011.</p>

Notes: Providing access to public lands is critical for meeting resource management and multiple-use objectives.

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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	Five range best management practices (BMP) reviews were conducted: Highpark, PK Horse, Sheep Trap, Sick Pasture and Upper Cold Springs pastures.  In each review, range management practices (developed using standards and guidelines) were maintaining or helping to improve watershed conditions, and soils were not being degraded, thereby showing that regional soil quality standards are being met.
		2. Measure the amount of severely impacted areas and compare with regional standards.  Monitor annually	

Monitoring Driver	Monitoring Question	Monitoring Items and Frequency	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.	

## LIST OF CONTRIBUTORS

The following individuals participated in the monitoring and preparation of this report:

<b>Name</b>	<b>Position</b>
David Beard	Tongue District rangeland management specialist
Ruth Beckwith	Forest landscape architect
Beth Bischoff	Medicine Wheel/Paintrock District rangeland management specialist
Bernie Bornong	Forest resources staff officer
Craig Cope	Powder River District recreation/wilderness/lands staff
Jason Ruybal	Forest civil engineer
R. Scott Gall	Powder River District rangeland management specialist
Mike Bower	Forest terrestrial biologist, fisheries biologist
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Bob Cochran	Medicine Wheel/Paintrock District recreation staff officer
Cheri Jones	Tongue District recreation staff officer
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Rick Laurent	Archaeologist (east zone)
Bill Mathews	Archeologist (west zone)
Dave McKee	Forest lands, special uses and recreation staff officer
Laurie Walters-Clark	Forest planning staff officer
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Amy Nowakowski	Hydrologist
David Anderson	Forest data manager
Amy Ortner	GIS specialist

## APPENDIX A – NARRATIVE DESCRIPTION OF COOPERATIVE AGREEMENTS / ACTIVITIES

### General Discussion

Monitoring Driver	Monitoring Question
<p><b>2. Objective 2a, Strategy 8 Objective 4c, Strategy 4</b></p>	<p><b>How well is the forest interacting and planning in cooperation with communities and local governments?</b></p>
<p>Cloud Peak Backcountry Horsemen contributed nearly 200 hours to trail maintenance and facility upkeep at Elgin Park trailhead.</p>	
<p>Cloud Peak Chapter Wilderness Watch volunteered over 500 hours to trail maintenance projects and completion of the stream water quality reports.</p>	
<p>Powder Pass Nordic Club completed its second winter of volunteer efforts on Nordic ski areas. The volunteers donated over 400 hours to trail marking, clearing, and packing projects.</p>	
<p>Volunteers provided over 4,000 hours to help with the management of the Powder River Ranger District in 2007.</p>	
<p>Three coordination meetings were held with Wyoming Game and Fish Department. The focus of the meetings was aquatics and wildlife.</p>	
<p>Forest continued annual meetings with each county on wildfire preparedness planning and response, including Cody Dispatch Zone operating procedures.</p>	
<p>Through a grant to the state of Wyoming, each county surrounding the forest receives money for wildfire training and equipment preparedness.</p>	
<p>In 2009, a scenic byway grant was awarded by WYDOT to continue reconstruction of facilities at Shell Falls Wayside. A small business contract to rehab the restroom building, stone walls, and other work was awarded in 2010 to Bairco Construction of Lovell, WY.</p>	
<p>Wyoming Travel and Tourism paid for fabrication of interpretive signs at Shell Falls Wayside. The signs were designed and fabricated by the Forest Service and were installed in May 2010.</p>	
<p>In 2010, WYDOT funded an agreement for Forest Service seed collection, grow-out, and planting of trees and shrubs for reclamation on the Steamboat Point/U.S. Hwy 14 reconstruction project.</p>	
<p>Two steering committee meetings were held in 2010: one in April and the other in August. The April meeting was held in Sheridan. Topics of discussion included water rights, updates on the range program, and American Recovery Act fund expenditure updates. Sixteen members were present, seven were non-Forest Service members.</p> <p>The August meeting was in the field on the Medicine Wheel/Paintrock District. Topics included the status of planned commercial timber activities and non-Forest-Plan controlled impacts, stay limit assessment, status of the Medicine Wheel National Historic Landmark nomination, Antelope Buttes Ski Area status, Cabin Creek Campground status, Bench stewardship status, and livestock grazing monitoring methods. Fifteen members were present, nine were non-Forest Service members.</p>	
<p>There were frequent phone calls and periodic meetings between district rangers and county commissioners and private citizens regarding pre-planning, implementation, and monitoring for proposed projects.</p>	
<p>Mosier Gulch trail was a trail construction project conducted cooperatively between the Powder River Ranger District, BLM, and the city of Buffalo.</p>	

<p><b>4. Objective 3a Potential Monitoring Item #1</b></p>	<p><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>
<p>The forest continued to support Ft. Washakie interagency helicopter program through an agreement for fire suppression.</p>	
<p>Big Horn County Resource Advisory Committee (RAC) was created in 2008 under the Secure Rural Schools and Community Self-Determination Act (Pub. L. 110-343). Three meetings were held in 2010. The council created operating guidelines and initiated a project recommendation process. Potential available dollars are over \$160,000. The committee recommended 14 projects by September 30, 2010 totalling over \$160,000. All recommended projects were approved by the Forest Service.</p>	
<p><b>4. Objective 3a Potential Monitoring Item #2</b></p>	<p><b>See potential monitoring item #1 above.</b></p>
<p>The forest held meetings with all four counties for to coordinate fire suppression. The Johnson County Fuels Mitigation Committee was formed to address private and forest (WUI) hazardous fuels concerns. Implementation of the Story fuels project continued with county, state, and forest programs combined. One hundred acres of prescribed burning on forest were achieved, with the county completing other private land activities through a Forest Service grant.</p>	

**Invasive Species**

<p><b>Monitoring Driver</b></p>	<p><b>Monitoring Question</b></p>
<p><b>12. Objective 1.c, Invasive Species Strategy 2,</b></p>	<p><b>What prevention activities and cooperative efforts have been implemented during the past year?</b></p>
<p>The forest continued cooperative agreements with Big Horn, Johnson, and Washakie counties to treat noxious weeds on national forest system lands. GPS points were provided for some treatment and inventory data. Inventory and treatment were also conducted on lands adjacent to the forest.</p> <p>Johnson County added treatment areas at the Hunter Work Center, Steerhead Ranch (on and adjacent to the forest), and Penrose Trailhead.</p> <p>In the past 2 years, the treatment strategy with Big Horn County Weed and Pest has resulted in finding additional noxious weeds (e.g., knapweed) in areas where only Canada thistle had been inventoried. Cooperation is excellent with Big Horn County Weed and Pest, as evidenced by the private forestry grant funding provided to treat the forest interface and their willingness to come accross county boundaries to treat noxious weeds on the Tongue District in Sheridan County.</p> <p>Big Horn County Weed and Pest and the Medicine Wheel/Paintrock Ranger District have cooperatively applied for State and Private Forestry funding annually. In 2010, they received about \$20,000. This was used for both treatment and inventory on lands at the forest interface.</p>	

**Wilderness**

<b>Monitoring Driver</b>	<b>Monitoring Question</b>																																						
<b>18. Objective 2b,                      Wilderness Strategies 2                      – 5</b>	<b>What level of crowding occurs on trails? Does the wilderness provide opportunities for solitude?</b>																																						
<p>Cloud Peak Wilderness recreation visitor days (RVDs) by trailhead:</p> <table border="0"> <thead> <tr> <th data-bbox="386 436 586 464"><b>Trailhead Name</b></th> <th data-bbox="834 436 906 464"><b>RVDs</b></th> </tr> </thead> <tbody> <tr><td>West Tensleep/Lost Twin</td><td>16,911</td></tr> <tr><td>Hunter TH/N Clear Creek</td><td>12,270</td></tr> <tr><td>Circle Park</td><td>8,040</td></tr> <tr><td>Battle Park/Grace Lake</td><td>4,830</td></tr> <tr><td>Coffeen Park</td><td>4,300</td></tr> <tr><td>Paintrock Lakes</td><td>2,140</td></tr> <tr><td>Edelman/Emerald lake</td><td>1,510</td></tr> <tr><td>Twin Lakes/Stull/Coney Lake</td><td>1,240</td></tr> <tr><td>Ranger Creek/Adelaide</td><td>1,180</td></tr> <tr><td>East Fork Little Goose TH</td><td>920</td></tr> <tr><td>Cross Creek/Bighorn Res</td><td>740</td></tr> <tr><td>Shell Reservoir/Lake</td><td>510</td></tr> <tr><td>Trigger lake</td><td>460</td></tr> <tr><td>Lily Lake/Paintrock Creek</td><td>136</td></tr> <tr><td>Kearney Lake</td><td>116</td></tr> <tr><td>Lake Angeline/Mid Clear Creek</td><td>105</td></tr> <tr><td>Bald Ridge</td><td>78</td></tr> <tr><td>Geddes/Weston/Babione</td><td>73</td></tr> </tbody> </table> <p>Total incidents/violation notices/warning notices = 140 (includes law enforcement and wilderness ranger contacts)</p> <p>Incidents = 65</p> <p>Violations = 49 (32 violations in 2009).</p> <p>Warning notices = 26</p>		<b>Trailhead Name</b>	<b>RVDs</b>	West Tensleep/Lost Twin	16,911	Hunter TH/N Clear Creek	12,270	Circle Park	8,040	Battle Park/Grace Lake	4,830	Coffeen Park	4,300	Paintrock Lakes	2,140	Edelman/Emerald lake	1,510	Twin Lakes/Stull/Coney Lake	1,240	Ranger Creek/Adelaide	1,180	East Fork Little Goose TH	920	Cross Creek/Bighorn Res	740	Shell Reservoir/Lake	510	Trigger lake	460	Lily Lake/Paintrock Creek	136	Kearney Lake	116	Lake Angeline/Mid Clear Creek	105	Bald Ridge	78	Geddes/Weston/Babione	73
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**Livestock Grazing**

	<b>Monitoring Driver</b>	<b>Monitoring Question</b>
26.	<b>Objective 2c, Livestock Grazing Strategies 1 and 2</b>	<b>How was information sharing and cooperation with livestock permittees, state and private agriculture organizations, universities, and research partners demonstrated?</b>
<p>The forest range staff worked with Dan Uresk (Forest Service Research) on calibration of the Robel pole monitoring method on granitic soil types across the forest.</p> <p>Forest range specialists attended the meeting of the Wyoming Section of the Society for Range Management (SRM) in Cody, WY. Five specialists attended the 2010 SRM annual meeting in Denver, CO.</p>		
<p><b>Powder River Ranger District</b></p> <p>Range specialists met with BLM counterparts in Worland and Buffalo to discuss wildlife, sagebrush treatment, and grazing issues of mutual concern.</p> <p>Range specialists met with permittees, in the field and after the grazing season, to discuss management and AMP planning on Tensleep watershed allotments.</p> <p>Range specialist joined permittee and Wyoming Game and Fish habitat specialist to discuss wildlife concerns on winter range in the Tensleep Canyon area, in conjunction with pending livestock grazing NEPA decision.</p> <p>District staff met with WYDOT officials at Pole Creek Highway camp to assess potential impacts to riparian area.</p> <p>Range staff met with NRCS to discuss new pipeline construction specifications on Tensleep Canyon allotment.</p> <p>Range specialist joined permittee and UW agriculture extension agent from Greybull on North Canyon allotment to participate in cooperative monitoring. Information sharing occurred through discussion of various monitoring techniques, how they could apply to the acceptable R2 Forest Service monitoring protocols, and the relationship between the monitoring already on the allotment.</p>		
<p><b>Tongue Ranger District</b></p> <p>Range specialist, David Beard, has participated in coordinating and putting on Range Schools through the Wyoming Section SRM.</p> <p>Range specialist on the Tongue District assisted the WGFD in collecting willow samples at eight locations. A nutrient analysis was done to identify deficiencies and develop a supplement strategy to reduce wildlife preference for willows. Initial results of the analysis show minor deficiencies in trace minerals (copper and iron).</p>		
<p><b>Medicine Wheel/Paintrock Ranger District</b></p> <p>The annual west side interagency coordination meeting was held in January 2010 with BLM, Wyoming Game and Fish, and Forest Service representatives. The purpose of the meeting was to share information about accomplishments from 2009 and projected projects for 2010. Topics include fisheries, wildlife, range, prescribed fire, and timber management.</p> <p>District range specialist joined permittee representative on the north rotation of Paintrock Basin C&amp;H allotment to participate in cooperative monitoring with a consultant they hired (Land, EKG). Information sharing occurred through discussion of various monitoring techniques the consultant is using, how they could apply to the acceptable R2 Forest Service monitoring protocols, and the relationship between the monitoring already on the allotment.</p> <p>Range specialist, fire management officer, forest hydrologist, forest fish biologist, permittee and permittee representatives (Big Horn County extension agent, and Guardians of the Range executive director) conducted a BMP review of a pasture on the district and associated management in relation to hydrology, soils, ground cover, etc.</p>		