Arapaho and Roosevelt National Forests
And
Pawnee National Grassland

Monitoring and Evaluation Report of the

1997 Revision of the Land and Resource Management Plan

for

Fiscal Year 2012

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Forest Certification

The 1997 Revision of the Land and Resource Management Plan (Forest Plan) provided goals and objectives to direct the future of resource management of the Forests and Grassland. The Forests and Grassland have completed the fifteenth season of implementing plan goals and objectives. Lessons learned from these fifteen years of monitoring and evaluation point how to better conduct interdisciplinary resource management and monitoring and evaluation of plan implementation by Forest and Grassland personnel. Monitoring and evaluation carried out by the Monitoring and Evaluation Team has resulted in no significant problems or reasons for change to the Revised Forest Management Plan at this time.

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Introduction

Location and History

The Arapaho and Roosevelt National Forests (ARNF) include 1.9 million acres of public land in the Rocky Mountains and foothills of north central Colorado. Boundaries extend north to the Wyoming border and south of Mt. Evans and Interstate-70. These two National Forests include lands on both sides of the Continental Divide. Topography on the forests varies from rolling hills to snow covered mountain peaks over 14,000' in elevation.

President Theodore Roosevelt established the Arapaho National Forest on July 1, 1908. It is named after the Native American tribe that occupied the region for summer hunting. Roosevelt National Forest originally began as a part of the Medicine Bow Forest Reserve, created in 1897. In 1910 portions of this reserve were renamed Colorado National Forest. Finally, in 1932 the Forest was renamed by President Herbert Hoover to honor President Theodore Roosevelt, the person who was the most responsible for its creation.

The Pawnee National Grassland (PNG) includes 214,000 acres of primarily short-grass prairie in two units located approximately 30 miles east of Fort Collins, Colorado. Elevations range from 4,300 ft. on the prairie to 5,500 ft. at the summit of the Pawnee Buttes.

The Pawnee National Grassland was transferred to the US Forest Service from the USDA Soil Conservation Service (SCS) in 1954. The SCS acquired this prairie during the dust bowl days of the 1930's and was charged with its rehabilitation. It was designated a National Grassland in 1960.

The Arapaho and Roosevelt National Forests and Pawnee National Grassland (ARP) are within a one-hour drive of the heavily populated Denver metropolitan area and the other heavily populated areas along the northern Front Range (Boulder, Ft. Collins, Longmont, Loveland and Greeley) and, therefore, are considered to be one of the fourteen Urban National Forests nation-wide. The landownership pattern of the ARP creates special challenges, with approximately 750,000 acres of small private parcels intermixed with federal lands.

Fifteen Years of Forest Plan Implementation

The ARP has made much progress in accomplishing Forest Plan objectives. Actual levels of accomplishment vary by programs due mainly to funding levels. When program budgets were low during these past fifteen years, staffing was reduced and projects were not implemented. The Forest Plan was optimistic in its funding predictions and, therefore, predictions for program objectives (Chapter 1, Forest Plan) were also overly optimistic. Some programs, though under-funded, have benefited from other well-funded projects. For example, the Wildlife Program is typically under-funded and wildlife habitat improvement acreage would have only increased in small increments. Yet, due to the increased funding to treat hazardous fuels, more acreage of wildlife habitat improvement has occurred than funding would have allowed. In addition, the wildlife program, as have other programs, has been successful in increasing funds through both internal and external partnerships.

The Forest Plan was overly optimistic in predicting future Recreation budgets (Base, Experienced or Full) as shown in the S-Tables. Funding has come to the Forest that has gone to accomplishing other priorities than the Forest Plan stated objectives on pages 7 and 8. However, there are many accomplishments in the recreation program since the 1997 Revised Forest Plan was approved. In 2000 the first round of National Visitor Use Monitoring surveys was conducted by the Forest Service. Another survey was conducted in

2005 and the most recent survey for the ARP was completed in Fiscal Year 2010 (FY 2010). The compilations of data for the 2000, 2005 and 2010 surveys shows that the ARP is in the top 5 of the most visited National Forests in the country.

Developed recreation has been somewhat invigorated through the Capital Investment Program since 1998 and more recently included infusions of capital from the Recreation Site Improvement (RSI) funds and funding from the American Recovery and Reinvestment Act (ARRA). In 2007, a Recreation Facility Analysis (RFA) was completed enabling the ARP to align management of facilities with expected budget levels and to reduce costs by proposing elimination of little-used recreation facilities and focusing appropriated and other funds toward reducing deferred maintenance. The RFA directly enabled the ARP to take full advantage of the RSI and ARRA funding that was initiated in 2008 (RSI) and 2009 (ARRA).

Many of the projects from these funds were contracted and initiated in 2010 and many were completed as well. The most recent of the ARP's construction projects for developed sites and facility improvements to have been reconstructed to bring them up to the standard our visitors expect include: Forest toilet vent stack replacements, Forest toilet replacements, Forest water system improvements, Pawnee National Grassland Bird Tour roads, signs and kiosks, Molly Lake, Mt. Margaret, and Lady Moon Trailheads reconstruction by Redfeather Lakes, Rainbow Lakes Campground (CG) reconstruction, Pawnee CG reconstruction, Brainard Lake Recreation Area (BLRA) Portal parking construction and Sourdough Trailhead reconstruction, BLRA day use parking construction, BLRA water system replacement, BLRA welcome/fee booth replacement, and a bridge replacement over the South St. Vrain Creek on the Boulder Ranger District.

The first ARP campground concession permit holder operated for 11 seasons and concluded their operations during the 2011 summer season. The ARP put out a prospectus for the succeeding concession permit, which stated in 2012.

Recreation fee collections through the Federal Lands Recreation Enhancement Act of 2004 (REA) allow the ARP to sustain and enhance our more heavily used recreation areas such as Mt. Evans and the Arapaho National Recreation Area. We are able to maintain these areas to high standards and expand interpretation and education programs through partnerships and fee collections. The Dos Chappell Nature Center along the Mt. Evans Road was completed in 2006 and provides the public key information about the surrounding fragile environment as well as provides a top quality interpretive and recreation experience at that destination. A settlement was reached on an ongoing lawsuit over Forest Service implementation of REA at Mt. Evans. On June 26, 2012, the Forest Service and the Plaintiffs signed a settlement agreement to resolve all issues raised in the Plaintiffs' complaint. The Forest Service implemented changes throughout the 2012 operating season.

Finally, recreation standard amenity fees at the Brainard Lake Recreation Area (BLRA), managed by the Forest concessionaire on the Boulder Ranger District, help offset costs of managing the parking areas, cleaning and pumping toilets, cleaning and trash service for the picnic areas, information booth staffing and some limited trail maintenance for the Mitchell Lake and Long Lake Trailheads. In addition, the 2005 recreation management/development plan for the Brainard Lake Recreation Area was also in process of substantial implementation, including design and construction of the BLRA Portal site, survey and design of Pawnee Campground reconstruction project and completed construction of the arched culvert on the Brainard Lake Road. The ARP resolved an issue over concessionaire non-acceptance of national passes for the standard amenity fees charged at BLRA. Negotiations between the parties resulted in acceptance of the national passes by the concessionaire.

Managing the scenery resource on the Forests during the past 15 years has been a challenge due in a large part to the effects of the mountain pine beetle infestation of mainly our lodgepole pine forests and very large wildland fires. Mortality of the mature lodgepole pine forest began more than ten years ago on the west side of the Continental Divide and become extraordinarily widespread in the last 6 years. It has recently moved onto the eastern side of the Divide. The High Park Fire on the Canyon Lakes District affected over 84,000 acres. As a result, the existing condition of the scenery resource in many areas of the ARNF has become incongruous with the Scenic Integrity Objectives described in the Forest Plan. Management activities designed to protect or improve forest health, reduce or mitigate the potential for large-scale, high-intensity wildland fire, or to protect the safety of forest visitors, have created noticeable changes to the scenic landscape both in General Forest Areas and in Developed Recreation Sites. And though the management activity-induced changes to the scenery have not always been met with immediate support from the public, these changes have been consistent with management direction provided in the Forest Plan and have not required any amendments to the Forest Plan.

Due to the increased effects of the mountain pine beetle infestation, surveys for cultural resources have become increasingly difficult. The safety of crews conducting pedestrian inventories in areas of dead and dying lodgepole pine trees has prompted the ARP to negotiate new modifications to our Bark Beetle, Hazard Tree Programmatic Agreement (PA). This PA allows the ARP to use off site mitigation in lieu of pedestrian inventory in areas where the hazard is too great to send in field crews to conduct surveys. This allows the Forest to complete projects without field inventory and still remain in compliance with Section 106 of the National Historic Preservation Act.

The National Fire Plan approval in 2000 led to increased awareness of the increasing wildfire risk to communities and support infrastructure including power lines and water supply. In 2002, the ARP joined with the Pike National Forest, the Colorado State Forest Service, the Forest Service Rocky Mountain Region, and the Forest Service Rocky Mountain Research Station to form the Front Range Fuels Treatment Partnership. The goals of the partnership are to reduce hazardous fuels and restore ecosystem health. In 2004, the partnership in concert with other interested parties helped create the Front Range Fuels Treatment Partnership Roundtable. The Roundtable is a diverse group of stakeholders that strive to build consensus to reduce the risk of wildland fire to communities and to restore lower montane forests. Through increased public and congressional awareness, the ARP is receiving increased funding to treat the buildup of dead trees and dense, overgrown forests. Through this hazardous fuels reduction we will better protect against the devastation of wildfires. Our ranger district personnel are actively working with local communities, county and state governments to plan treatment projects in potential hazardous fuels areas. In Fiscal Year 2012 (Oct 1, 2011 - September 30, 2012) the ARP treated over 13,313 acres of hazardous fuels including both Forests and the Grassland.

Mountain pine beetle (MPB) populations began increasing west of the Continental Divide (a.k.a. Divide) on the Sulphur Ranger District in the late 1990s. MPB populations reached epidemic levels within the Sulphur Ranger District in the period from 2001 to 2003 and have continued to exist at epidemic levels. In 2007 MPB began occurring in larger numbers east of the Divide. By 2008, populations had reached epidemic levels in a number of areas east of the Divide. The MPB infestation, although slowing, continues to grow. In 2012, 56,000 new acres were affected on the Forest. The ARP has joined with the Colorado Bark Beetle Cooperative and Northern Front Range Mountain Pine Beetle Working Group to collaboratively address issues that have arisen from tree mortality associated with the MPB epidemic. Hazard trees along roads, trails, power lines, and in campgrounds are an increasing issue. Timber harvest has been an important tool in addressing these issues. The timber program was able to offer and sell nearly 40,000ccf of timber in FY 2012. Much of this came from the bark beetle impacted areas of the Forest and contributed to create a variety of wood products from traditional lumber to pellets, fence posts,

pulp, landscaping materials, and animal bedding. Use of the recently awarded Front Range Long Term Stewardship Contract allowed for accomplishing most of the sales awarded.

Approximately 976 acres of timber stand improvement was accomplished in FY 2012. However, thinning has occurred in many acres of older stands to reduce hazardous fuels. Thinning in these older stands amounted to 544 acres. In many cases this activity improves the stand health as well. In stands of lodgepole pine and spruce fir, thinning has been limited to some extent by the need to protect snowshoe hare habitat in an effort to recover the listed lynx. This may limit forest productivity in the future.

The Lands program has met or exceeded most Forest Plan objectives. For encroachment cases the Forest Plan projected that 378 cases on file would be resolved (at base budget levels) in the 10 year period to 2007. Over the past 13 years, 102 cases have been resolved, but some of these were newly discovered in that 13-year period. On average, 10-12 cases are discovered yearly. Many of those encroachment cases are resolved through removal, authorization or land adjustment. The Forest Plan projected that 10,050 acres of lands would be consolidated through ownership adjustment. In the 13-year period, 10,275 acres were consolidated, mostly through exchange. The Forest Plan projected that for the first 10 years (1998-2007) of Plan implementation, that 64 special use applications which were on file would be processed. For the most part, those have been processed and authorized or rejected due to the 36 Code of Federal Regulations (CFR) 251 screening process. The ARP continues to receive special use applications at a rate of 25-35 per year, some of which can be processed with little time and effort, but many that require extensive environmental analysis (National Environmental Policy Act – NEPA) and several years to bring to conclusion.

Abandoned mines occur throughout the ARP. In 2012, important progress was made in reducing and rehabilitating physical and environmental hazards from abandoned mines. Several safety closure projects occurred across the forest. These projects were completed through partnerships with federal and state agencies, local governments, community organizations and private landowners.

The soils and water program focuses on projects that will improve watershed condition. Projects funded with direct watershed funding, as well as by other resource areas, including the engineering and abandoned mines programs, accomplished 24 miles of road decommissioning on the Sulphur and Canyon Lakes Districts to improve the watershed and wildlife habitat.. Other projects included: continuing restoration and travel management in the Left Hand Off-Highway Vehicle (OHV) Area, the Bunce School area, the Kingston Peak area and the Spring Gulch Area on Boulder and Clear Creek Ranger Districts; completing an annual fisheries and watershed improvement project by restoring 18 miles of stream. The ongoing work in the Left Hand OHV area has been accomplished cooperatively through the watershed, recreation, and wildlife programs on the ARP.

External partners have been essential to the project, and include: OHV user groups; the James Creek Watershed Initiative, who have obtained hundreds of thousands of dollars in grants for restoration; and Wildland Restoration Volunteers (WRV), who have provided hundreds of days of volunteer efforts. Design, construction, erosion control and planting were all accomplished through cooperation with the volunteers of WRV. In 2012 the WRV and Canyon Lakes Ranger District restored 4 miles of the North Fork Poudre River. The ARP partnered with Colorado Parks and Wildlife to remove more than 450 nonnative brook trout in more than three miles of Bobtail Creek . The nonnative fish were removed to facilitate the persistence of a native cutthroat trout population in the Upper Williams Fork River basin in Grand County on the Sulphur Ranger District.

To better guide our efforts to reconnect stream habitats for aquatic life, road culverts have been systematically inventoried for the Sulphur and Canyon Lakes Districts. This effort started in 2010 and

continued through 2012 and once completed will identify road crossing that pose risks to habitat fragmentation and will aid in prioritizing and remedying fish passage barriers. In addition, lake habitats were managed cooperatively with Colorado Division of Wildlife in Lake Granby, Shadow Mountain Reservoir, and Grand Lake through invasive species education and boat inspections to prevent introduction and the potential spread of Quagga/Zebra mussels.

Soil, water, and, air monitoring on the ARP has continued and evolved in response to ongoing and emerging issues. Implementation and effectiveness monitoring, conducted to support vegetation management activities on the Forests and Grassland included prescribed fire monitoring on the Pawnee National Grassland and soil disturbance monitoring for forest fuels reduction treatments, timber sales, and pine beetle treatments on Boulder and Canyon Lakes Ranger Districts. In 2012, the ARP Canyon Lakes Ranger District had the largest wildfire, High Park, in its recorded history of nearly 90, 000 acres on both public and private lands. Watershed personnel provided input and guidance for the Burned Area Emergency Response (BAER) team for restoration efforts. Restoration efforts were implemented in 2012 and the areas will be monitored in 2013 and beyond per the BAER team recommendations. Ongoing air quality monitoring programs, conducted in cooperation with Regional Air Quality personnel and the Rocky Mountain Research Station include ozone sampling at 3 stations across the Forests and lake sampling at 8 high elevation lakes within ARNF wilderness areas

Rangeland Vegetation Management: Year 2012 was a year of below average precipitation. The previous two years were generally above average in precipitation, although the timing of the spring and summer moisture was often not ideal for vegetation development. March was unseasonably warm, and Colorado and Wyoming recorded the hottest June on record; incessant winds seemed to constantly sap soil moisture quickly whenever small showers occurred. Monsoonal flows in July were favorable in timing and amount, but the moisture seemed in many cases to not even make it down into the plant root zone because of the constant hot winds; many parts of the Pawnee National Grassland did not even green-up after the monsoon rains.

Many operators turned out on the on-date with fewer numbers and many had to leave early. A combination of low snowpack, early spring and an initial hot dry early summer led to below average forage production. Some operators chose to take non-use due to this low forage production. Mid-summer rains prevented more severe impacts to operators. Overall, many operators were not able to run their permitted numbers. The voluntary reduction in livestock numbers and leaving the Forest early are good examples of proper rangeland vegetation management techniques – reducing livestock commensurate with the level of site-specific forage production and water availability.

As a result of the dry conditions some portions of the Forest had large wildfires. This resulted in the loss of multiple miles of fence.

Of the nearly 485,000 acres in 176 active grazing allotments, 331,749 acres (68%) were administered to standard in 2012 (61% of the Forest allotments and 79% of the Grassland allotments); total acres were reduced from most years because two rangeland management specialist positions were vacant for the entire year (one on Canyon Lakes and one on the Pawnee). Long-term inventory and analysis efforts have been completed on all allotments in the last decade. Allotment/nepa planning efforts are complete for 100% of the allotments on the Forest and Grassland, and on schedule at the end of 2010.

The Grassland has been considered a world class birding destination and in 2010 the 35-mile Pawnee Self-Guided Birding Tour was implemented.. The Grassland has been diligently working with its range allotment permittees to improve range condition through better cattle distribution and improved grazing systems. The Grassland staff continued to implement the Black-tailed Prairie Dog Management Plan and

continued working with private landowners (ranchers/farmers), grazing permittees, the environmental community, and other agencies during implementation. The PNG is interspersed with numerous roads and "two-tracks". The district staff has been doing extensive travel management planning which has led to improving highly used roads and closing little used roads to improve wildlife and range habitat.

The botany program has had significant growth and accomplishments across the ARP. The Forest and Grassland has identified seven Threatened or Endangered plants, about 40 US Forest Service Region 2 Sensitive plants, and about 100 other rare plants or plant communities of local concern that occur on the ARP or occur nearby that could be impacted by management activities. When encountered during Forest projects, these species are typically avoided or impacts to them are minimized. Proactive surveys have occurred since 2002 for rare plants or for specialized wetland ecosystems called "fens," which are of high biological value in Colorado and often harbor rare plants. In 2007, one species of moonwort (primitive fern-like plant), new to science, was discovered on the Forests. It recently was documented to occur in South Dakota, Wyoming, New Mexico, and Canada. The Forest Botanist is assisting in formally describing this species. A working herbarium housing all of the Forest's plants is planned for completion in 2013.

Noxious weeds are a problem in some areas on the ARP. To move proactively ahead in reducing this problem, a Forest- and Grassland-wide noxious weed management plan was developed. In 2012, about 4,420 acres of noxious weeds were treated.

The wildlife and fisheries programs have continued to provide recreational and educational opportunities to the public. Interactive educational programs for local schools and communities have continued to have expanded and increased participation each year. In 2012, the "Save the Frogs Day "and "Water, Wildlife and Trails" programs continued to take the Forest into local classrooms while the Adventure Backpack program and Christmas bird counts took citizens to the field. The Forest partnered with local wildlife agencies to emphasize education in human/bear encounters in campgrounds and saw improvements in communication and response over past years. On-the-ground and in-stream habitat improvement projects have enhanced available habitat for a variety of species, including threatened, sensitive, and management indicator species. Increased efforts to survey important habitats and species have led to a better understanding of existing old growth conditions and presence of Preble's meadow jumping mouse. Efforts are also underway to improve habitat mapping for the Canada lynx and Preble's meadow jumping mouse. Increased surveys of bats and their habitat helped in assessing the risk of White-nosed Syndrome on the ARP . Key results from genetic studies of greenback cutthroat trout will shape future management decisions within the next year.

Not enough can be said about the hundreds of volunteers on the ARP. By hiking in the Wildernesses, raft-patrolling on the Poudre River, working on the Continental Divide Trail, maintaining the 100s of miles of summer and winter trails, building trail bridges and water control structures, counting birds, working in our offices, and ad infinitum; these volunteers provide a tremendous service to the public and helped provide services that would otherwise not have been completed due to limited ARP program budgets. More than 1,600 volunteers and more than 100 partners/businesses provided 70,000 hours of volunteer work in 2012, valued at $1.5 million.

In 2003 the Chief of the Forest Service identified unmanaged recreation, and specifically OHV use, as one of the four major threats to sustainable forest health. As a result, on November 9, 2005 the "Travel Management: Designated Routes and Areas for Motor Vehicle Use Rule" (aka Travel Rule) was finalized in the Federal Register. This rule requires the Forest Service to designate a system of roads, trails, and areas open to motor vehicle use by season and vehicle type. The public has had, and will continue to have, full review of preliminary inventory and maps. This designation is completed via publication of a

Motor Vehicle Use Map (MVUM), which will be printed annually and updated as often as necessary. After MVUM's have been printed, it is a violation of Forest Service regulations to use or possess a motor vehicle anywhere not designated on the MVUM.

Several of the ranger districts on the ARP began work on their road/trail inventory in FY07 and continued into FY08, FY09 and FY10. Their actual completion dates are as follows:

Sulphur	September 2007
Pawnee	May 2008
Canyon Lakes	September 2009
Boulder	December 31, 2010
Clear Creek	December 31, 2010

Forest Closure Order No. UFC-01-13 (Urban Front Country Occupancy & Use, approved on 6-30-13) prohibits "using a motor vehicle off of National Forest system roads except snowmobiles operating on at least six inches of snow" and "using any type of vehicle on any National Forest system road or trail except those vehicles that are allowed by signing on that road and trail." The order also lists, by Ranger District, specific roads and trails closed to motorized vehicle travel, year-round and seasonally. Districts are implementing the above closure order, as well as implementing the MVUM and planning for any needed additional closures and opportunities for motorized travel. The order is nullified for motorized travel designations when each District published its first MVUM.

In 2005, the U.S. Forest Service adopted the Travel Management Rule. The travel management regulations (36 CFR 212.5(b)) requires as part of "Subpart A – Administration of the Forest Transportation System" that the Forest Service "responsible official must identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands" and "identify the roads on lands under Forest Service jurisdiction that are no longer needed to meet forest resource management objectives and that, therefore, should be decommissioned or considered for other uses, such as for trails." The ARP followed this direction by setting up the process for analyzing the road system by developing resource-based criteria and creating models for consistent analysis across the Forests and Grassland.

Limited recreation management and law enforcement funding have maintained only minimal Forest Service employee presence on the Forests and the Grassland. This puts an undue burden on our few law enforcement officers who are required to cover 700,000 acres per officer and respond to over 850 incidents per year. While the public is being underserved because not many ARP personnel are "in-the-woods" to answer visitors' questions or to protect public land resources through enforcement of regulations, some progress was made in our General Forest Areas (GFA) by emphasizing efforts to provide uniformed Forest Service presence in the field during critical high-use periods.

The roads infrastructure program and accomplishments were similar to those in previous years. Base funding decreased in fiscal year 2012, however, the Forest received supplemental road funding to assist in hazard tree removal and fuels reduction. Emphasis in 2012 was again in support of these two programs with approximately 77 miles of high-clearance roads maintained. An additional 126 miles of roads for roadside hazard tree and bark beetle mitigation work were also maintained. Strong partnerships with local counties accounted for an additional 302 miles maintained. Other program areas contributed funding for road maintenance for the improvement of watershed conditions. Planning and road decommissioning continued to be part of the yearly program of work with approximately 4 miles of system roads decommissioned and 19 miles of unauthorized roads decommissioned in 2012.

The ARP is working towards making its operations more sustainable. The ARP is continuing to reduce our petroleum consumption and we lead our region (11 managing units of combined 23 National Forests and National Grasslands) for having the best average gas mileage. To continue this progress, the ARP invested in a plug-in hybrid electric car to add to its 2013 fleet. Also, the ARP completed a self-review of its annual utility bills to identify facilities with the highest energy and water use. This data was used to develop a strategy for reducing energy and water consumption. Twenty-two buildings from a former dude ranch were removed from the Arapaho National Forest and a majority of the materials were recycled. Our Boulder Ranger District installed a 6 kilowatt solar photovoltaic system at its office. The system will provide roughly 9 percent of the total facility's electrical needs and resulted in an estimated seven metric tons reduction of carbon dioxide emissions.

The ARP is utilizing current data and research concerning a changing climate to manage the National Forest System and Grassland lands. Changing management practices were instituted due to the prolonged season of drought. Range specialists worked with range permittees and two grazing associations on the PNG to ensure sustainable forage, which included reducing livestock numbers and shortening seasons in response to drought. Livestock use on the Forests and Grassland was reduced about 45 percent. National Forests by growing trees sequester carbon until the trees are removed from the National Forest. The ARP's science-based management protects watersheds, provides clean air and helps act as this carbon sink. However, wildfires such as the very large High Park Fire on the Canyon Lakes District and mountain pine beetle infestation have caused the live trees to die, resulting in less sequestration, either by trees burning up and releasing their carbon into the atmosphere or removing dead trees from the Forests with fuel reduction activities. In 2012, approximately 3,800 acres of forest were treated to promote restoration of Ponderosa pine and mixed conifer forests. More than 15,000 trees were planted on the Canyon Lakes Ranger District and 320 trees on the Sulphur Ranger District to jump start the recovery of key recreation areas.

The remainder of this report describes Forest Plan monitoring and evaluation. In these sections there is more in-depth information about programs and resources on the Arapaho and Roosevelt National Forests and Pawnee National Grassland.

Monitoring and Evaluation

The 1997 Revised Forest Plan describes a monitoring program to evaluate forest plan implementation, which is programmatic and designed to evaluate the conditions on the Forests and Grassland. Monitoring and evaluation are separate, sequential activities required by the National Forest Management Act (NFMA) regulations to determine how well objectives have been met and how closely management standards and guidelines have been applied. Monitoring usually includes data collection and information gathering. Evaluation is the analysis of the data and information and the results are used to determine the need for changes to the Revised Forest Plan or how it is implemented.

To guide this monitoring and evaluation process, Chapter 4 of the Revised Forest Plan lists many monitoring questions presented in two tables. Table 4.1 lists the questions, which were developed to address the legally required monitoring per NFMA. The Revised Forest Plan management emphasis goals and objectives are addressed in the questions found in Table 4.2.

Table 4.1. Minimum Legally Required Monitoring Activities.

Action, Effect or Resource to be Measured	Frequency of Measurements	Precision and Reliability*	M & E Report**
Lands are adequately restocked. 36 CFR 219.12(k)5(i)	Mix of 1st, 3rd & 5th years per FSM 2472.4	A	Annual
Lands not suited for timber production. 36 CFR 219.12(k)5(ii)	Year 10	A	Year 10
Harvest unit size. 36 CFR 219.12(k)5(iii)	Years 5 & 10	B	Years 5 & 10
Control of destructive insects and diseases. 36 CFR 219.12(k)5(iv)	Annual	B	Annual
Population trends of management indicator species in relationship to habitat changes. 36 CFR 219.19(a)(6)	Years 5 & 10	B	Years 5 & 10
Effects of off-road vehicles. 36 CFR 219.21	Annual Review, Analysis years 5 & 10	B	Years 5 & 10
Effects to lands and communities adjacent to or near the National Forest and effects to the Forest from lands managed by government entities. 36 CFR 219.7(f)	Years 5 & 10	B	Years 5 & 10

Comparison of projected & actual outputs and services. 36 CFR 219.12(k)1	Annual	A	Annual
Prescriptions and effects. 36 CFR 219.12(k)2	Years 5 & 10	B	Years 5 & 10
Comparison of estimated and actual costs. 36 CFR 219.12(k)3	Annual	A	Years 5 & 10
Effects of management practices. 36 CFR 219.11(d)	Years 5 & 10	B	Years 5 & 10

*Monitoring methods used are divided into two categories, A and B based on their relative precision and reliability:

- A – Methods are generally well accepted for modeling or measuring the resource. Methods used produce repeatable results and are often statistically valid. Reliability, precision, and accuracy are very good. The cost of conducting these measurements is higher than other methods. Methods are often quantitative.
- B – Methods or measurement tools are based on a variety of techniques. Tools include: project records, communications, on site ocular estimates and less formal measurements such as pace transects, informal visitor surveys, aerial photo interpretation, and other similar types of assessments. Reliability, accuracy, and precision are good but usually less than that of A. Methods may be more qualitative in nature bu6t they still provide valuable information on resource conditions.

**The frequency of measurement and reporting are triggered by regulation as well as anticipated intervals at which gathered data will provide meaningful information.

Below are the responses to these monitoring activities. The long number with the letters "CFR" is the citation to the Code of Federal Regulations which translates Congressional Law (in this case, NFMA) into working regulations which the Forest Service can apply to management of its lands.

Lands Are Adequately Restocked - 36 CFR 219.12(k)(5)(i)

This CFR requires a determination of compliance with the standard that lands are adequately restocked as specified in the Forest Plan. Monitoring for compliance is accomplished through surveys the first, third, and fifth years following reforestation treatment. Where natural regeneration is prescribed the first year survey can be a walk-through survey to determine that the timber harvest and/or site preparation activities have produced site conditions conducive to adequate stocking within five years following final harvest. Third year and any subsequent surveys must be fixed plots to determine stocking levels and distribution.

Since inception of the 1997 Forest Plan the silviculture objective has been to achieve natural regeneration success on harvested acres. Surveys have been conducted as required to assure restocking on suitable and available lands receiving a final harvest treatment. For the period of FY 1998 through FY 2010, almost 11,315 acres of natural regeneration have been certified as satisfactorily restocked and 207 acres have been planted. The need for regeneration of forested stands has dropped since 2000. The primary reason for this is that reduced levels of timber harvest in the mid to late 1990s created reduced need for stand regeneration. It is anticipated that the current mountain pine beetle mortality will increase the need for regeneration activities in the future. This would occur primarily in developed recreation sites and in areas impacted by wildfire. Funding regeneration activities that require seedlings grown in nurseries, such as campgrounds, will be a challenge.

Harvest Unit Size - 36 CFR 219.12(k)(5)(iii)

This CFR requires the maximum size limits for harvest areas are evaluated to determine whether such size limits should be continued. Forest Plan Standard 63, page 22, establishes 40 acres is the maximum allowable opening acreage for all forest types. This standard was established per 36 CFR 219.27(d)(2). There was no ecological basis for this size limitation identified in the Forest Plan or its Environmental Impact Statement (EIS). However, due to salvage of dead and dying lodgepole pine from mountain pine beetle outbreaks in Grand County, exceptions that allowed for openings greater than 40 acres have occurred. Several treatment areas on the Canyon Lakes and Boulder Ranger Districts have approached the 40 acre size limit. Again, this has resulted from the MPB epidemic and the need to treat hazardous fuels adjacent to the wildland-urban interface.

Control Of Destructive Insects And Diseases - 36 CFR 219.12(k)(5)(iv)

This CFR requires a determination that destructive insect and disease organisms do not increase to potentially damaging levels following management activities. The most damaging insect and disease organisms currently occurring on the Forest are mountain pine beetle, *Dendroctonus ponderosae,* and dwarf mistletoe, *Arceuthobium spp.*

In the late 1990's an increase in mountain pine beetle (MPB) activity in lodgepole pine (LPP) stands was noted in the Williams Fork on the Sulphur Ranger District. In 2000-2001 the MPB began to expand rapidly in the Williams Fork and increased activity was noted on other areas of the District especially near Grand Lake. District personnel began analysis to try to improve the resistance of LPP stands to MPB, reduce hazardous fuels associated with the MPB killed trees and salvage MPB killed trees. In addition the District conducted spraying operations in campgrounds to limit MPB caused mortality of LPP. Mountain pine beetle has also infested ponderosa pine where it is mixed with lodgepole pine stands. By 2007 the MPB epidemic had spread throughout LPP on the Sulphur Ranger District. All efforts to improve resistance to MPB have been unsuccessful. Spraying in campgrounds and other recreation facilities continued to protect most trees; however, it has become apparent that this will not be a long-term solution. In FY12, spraying has ceased on the Sulphur Ranger District. However, MPB mitigation work still continues at Winter Park Resort. It is hypothesized that the length of the epidemic and the high MPB numbers were primarily responsible for the failure of mitigation techniques.

There are approximately 183,000 acres of LPP on the Sulphur Ranger District (SRD). As of 2008 the epidemic has affected all of those acres. It is estimated that approximately 80 percent of the LPP over 4" in diameter have been killed by the MPB on these acres. It is likely that at least 90% of the LPP over 4" in diameter on the District will eventually be killed by MPB.

Mountain pine beetle impacts on the Canyon Lakes, Boulder, and Clear Creek Ranger Districts east of the Continental Divide continued to increase in 2012, but at a decreasing rate compared to previous years. Most of the increase occurred east of the Divide, especially in Larimer County.

The mountain pine beetle affected limber pine, bristlecone pine and ponderosa pine stands on the Front Range. Mortality has been observed in these species and as the MPB epidemic moves east of the Continental Divide the acres affected are expected to increase. There has also been some mortality of spruce caused by the high MPB population density west of the divide. Although spruce is not a host for MPB it can be attacked and subsequently killed when no suitable LPP are available.

This MPB epidemic is resulting in an altered age structure of LPP stands on the SRD and now east of the Continental Divide. Initially substantial numbers of LPP snags are created. These snags will slowly rot, generally at the base, and the dead trees will fall over in the next 20+ years. The actual rate of snag fall can be influenced by several factors. The regeneration of the forest will also begin. Lodgepole have both serotinous and non-serotinous cones. For seed to be released from serotinous cones a heat source is required. This can either be from a wildland fire or once the trees fall the cones can be sufficiently heated by radiation from the sun on the ground. Therefore, without intervention, reforestation in areas with serotinous cones will occur over time as the trees fall. Lodgepole pine regenerates well after stand replacement events so it is anticipated that adequate regeneration will occur over time. Timber harvest of the dead trees can speed regeneration by placing the cones near the ground. Also, in areas with existing aspen clone stands, these aspen should be able to expand due to the LPP mortality.

Fire hazard may also be modified to some degree by the mortality caused by the MPB. The year after a tree is attacked by MPB the needles die and turn red. These dead needles do not contain the same level of moisture as do green needles and are more easily ignited by a heat source. The dead needles tend to persist on the trees for several years. Also, not all trees in a stand or watershed are attacked and die at the same time. This is a multi-year event. Therefore, the period of increased flammability can last for a number of years after the initial tree mortalities from MPB. It should be noted that LPP of the size and age being killed by MPB often experiences stand replacing wildland fire. So, it is not that there was not a fire risk prior to the MPB, it is that the effect of the MPB epidemic initially will make it more likely that a stand replacing wildland fire could occur under more moderate conditions. Once the needles fall from a majority of the trees the wildland fire hazard should be reduced for a few years. Then as a majority of the dead trees fall the fire hazard will increase again. Under this situation the type of wildland fire would more likely be a ground fire, which could result in increased damage to soils due to the heavy fuel concentration close to the ground.

Dwarf mistletoe is wide-spread throughout lodgepole pine and ponderosa pine stands on the ARNF. Some removal of dwarf mistletoe infested lodgepole pine trees within timber sale contract areas has been done.

The occurrence of both of these organisms occurs naturally in forested areas and has not been shown to be a result of management activities.

Spruce beetle populations and related mortality continue to increase on Canyon Lakes, Boulder and Clear Creek Ranger Districts. Areas of bark beetle infestations include; the Rawah Wilderness, Buckeye and Tennessee Mountain, Loveland Ski Area, Berthoud Pass, and Peaceful Valley. White pine blister rust was observed for the first time on the Boulder Ranger District in 2005.

The Forest continues to experience a small isolated outbreak of *Ips* beetle on hazardous fuels reduction projects on the Canyon Lakes Ranger District. The primary area of infestation appears to be adjacent to the Bobcat wildfire.

Population Trends Of Management Indicator Species In Relationship To Habitat Changes - 36 CFR 219.19(a)(6)

This CFR requires that population trends of the management indicator species (MIS) will be monitored and relationships to habitat changes will be determined. This monitoring will be done in cooperation with State fish and wildlife agencies to the extent possible.

MIS were selected according to NFMA ensuing regulations and Forest Service (FS) policy in the 1997 Forest Plan. Species were selected to serve as meaningful indicators of population-habitat relationships in ecosystems where management activities and habitat change were likely to occur. Important management indicator communities (MICs) for fish and animals were defined for both the ARNF and the PNG. MIS for each MIC, and all state and federal threatened and endangered that may be affected by management were selected. A total of 34 MIS were selected for the entire ARP Planning unit (9 mammals, 15 birds, 6 fish and 3 amphibians). Four MIS are common to both forests and grassland, with 26 species selected for ARNF and 12 species for PNG.

While the 1997 Revised Forest Plan MIS requirements were developed according to law and policy that remain in effect today, experience and findings during Forest Plan implementation since 1997 with monitoring and evaluation has shown that the ability to monitor population trends is less than expected for certain MIS. Additionally, a process for selection of MIS was developed in June 2001 as part of the Rocky Mountain Region Plan Revision Desk Guide. Experience with implementing forest plans during the past decade, court rulings, better scientific understanding of the role of MIS, refined survey protocols and the second round of forest planning indicated that a review and possible revision of the 1997 MIS list for ARP was appropriate.

Using the Region 2 MIS selection process as a guide, a reevaluation indicated that revision of the 1997 MIS list was most appropriate to assure that all MIS were able to be monitored during the life of the Forest Plan, and were meaningful indicators of management effects to habitat condition or change (*Environmental Assessment for Forest Plan Amendment for Management Indicator Species*, 2005). The Forest Plan was subsequently amended to remove 13 species due to inability to monitor and 5 species as not being meaningful indicators of management actions. MIS population data through 2004 were available and used in the reevaluation and a Forest Plan amendment was approved in early 2005. The amended MIS list of May 3, 2005 follows.

Amended list of MIS for ARP (2005)

(21 individual species, with one common MIS* to both AR and PNG).

	ARNF (14*)	PNG (8*)
Mammals (4*)	elk	black-tailed prairie dog
	mule deer*	mule deer*
	bighorn sheep	
Birds (10)	hairy woodpecker	ferruginous hawk
	pygmy nuthatch	burrowing owl
	golden-crowned kinglet	mountain plover
	mountain blue bird	lark bunting
	warbling vireo	
	Wilson's warbler	
Amphibians (1)	boreal toad	
Fish (6)	brook trout	plains topminnow
	brown trout	plains killifish
	greenback cutthroat trout	
	Colorado River cutthroat trout	

Population Trends of MIS for ARP

As stated above, monitoring was done in cooperation with State fish and wildlife agencies, organizations, and universities to the extent possible. For PNG species, a combination of state, forest, university, and contract (Rocky Mountain Bird Observatory- RMBO) data was used. For ARNF/PNG big game species, estimates are based on Colorado Division of Wildlife (CDOW) post-hunt population estimates. Boreal toad population data was collected by a variety of agencies, all members of or accepted by the Boreal Toad Recovery Team. For MIS bird species, RMBO transect data have been the most widely used over the past 15 years.

MAMMALS

Elk

- ARNF population trend has varied from 1997-2012 with a population high of 22,201 in 2011 and a low of 18,220 in 2009. The 15 year average for herds in and near the ARNF is 19,852 animals.
- Colorado population estimates varied with a high of 305,500 in 2001 and a low of 218,500 in 1997. The state-wide 15 year average is 273,412

Mule Deer

- ARNF population trend has varied from 1997-2012 with a population high of 48,300 in 1998 and a low of 37,294 in 2006. The 15 year average for herds in and near the ARNF is 42,759 animals.
- PNG population trend has varied from 2000 to 2011 with a population high of 2500 in 2011 and a low of 1,450 in 2004. The15 year average for PNG animals is 1890.
-
- For Colorado, an estimated population high of 602,700 in 2003 and a low of 417,950 in 2011. The 15 state-wide average is 532,650 animals.

Bighorn Sheep

- ARNF population trend has varied from 1997-2012 with an estimated population high of 1,380 in 1999 and a low of 965 in 2011. The 15 year average for herds in and near the ARNF is 1199 animals.
- For Colorado, an estimated population high of 7,720 in 1997 and an estimated low of 6907 animals in 2010 makes for a statewide 15 average of 7292.

Black-Tailed Prairie Dog (Needs updating)

- The highest acreage in 25 years occurred in 2005, totaling 3673 acres. Three plague events occurred after the towns were surveyed in 2005, resulting in a loss of about 1/3 or a year-end total of about 2460 acres.
- From 1981 to 2008, acres of towns have varied between a low of 179 acres in 1983 to a high of 3673 acres in 2005. The average acres of towns for that 27 year period are 956 acres. The number of prairie dog towns has varied with a high of 61 towns in 2007 and a low of 13 towns in 1984; the average is 23 towns; reductions were primarily caused by plague events.
- According to the Colorado Division of Wildlife et. al., the number and size of prairie dog towns present best indicate population levels.

BIRDS (all need updating)

Burrowing Owl
Estimates have generally been increasing between 1998 and 2007 with 1999 and 2007 being the only years to show a decrease. 2006 saw the highest estimate with 596 owls detected and 1998 was the lowest with 122 owls. The 10 year average is 247 owls.

Mountain Plover
Estimates have varied between 1990 and 2007 with an estimated high of 77 birds in 1990 and a low of zero birds in 2004. The 18 year average is 19 birds. The periods of 1994 to 1997 and 2001 to 2004 saw significant decreases.

Ferruginous Hawk
RMBO transect data indicates an estimated high of 3 birds detected in 2003 and a low of zero birds detected in multiple years. The ten year average is 0.9 birds and 0.7 transects with detections per year. The PNG has conducted surveys for active nests from 1981 to 2007 and has had a high of 15 in 1991 to a low of 3 in 2003. The average for this 27 year period is 9.2 active nests per year.

Golden-Crowned Kinglet
Estimates have varied between 1998 and 2007 with an estimated high of 25 birds in 2007 and a low of zero birds in 2003. The 10 year average is 11.7 birds and 5.3 transects with detections per year.

Hairy Woodpecker
Estimates have varied between 1998 and 2007 with an estimated high of 17 birds in 2007 and a low of zero birds in 2003. The 10 year average is 8.10 birds and 2.2 transects with detections per year.

Lark Bunting
Estimates have varied between 1998 and 2007 with an estimated high of 465 birds in 2007 and a low of 121birds in 2002. The 10 year average is 212 birds and 3.2 transects with detections per year. Note that no transects were read in 2006.

Mountain Bluebird
Estimates have varied between 1998 and 2007 with an estimated high of 24 birds in 2007 and a low of zero birds in 2000. The 10 year average is 8.5 birds and 3.2 transects with detections per year.

Pygmy Nuthatch
Estimates have varied between 1998 and 2007 with an estimated high of 39 birds in 2007 and a low of zero birds in 2003. The 10 year average is 11 birds and 2.6 transects with detections per year. Note that transects in typical habitat (ponderosa pine) were not read in 2003.

Warbling Vireo
Estimates have varied between 1998 and 2007 with an estimated high of 60 birds in 2000 and a low of 2 birds in 2003. The 10 year average is 41.3 birds and 6.8 transects with detections per year.

Wilson's Warbler
Estimates have varied between 1998 and 2007 with an estimated high of 74 birds in 2007 and a low of one bird in 1998. The 10 year average is 19 birds and 3.3 transects with detections per year.

AMPHIBIANS

Boreal Toad
Approximately 27 sites are monitored on the ARNF. Of the 27 sites, 10 are Bd positive, 9 are Bd negative and 8 are untested. Despite the discovery of new breeding sites, survey data indicate a downward trend in and near the ARNF.

FISH

Brook trout – Species occurs throughout all watersheds of the Arapaho and Roosevelt National Forests. While land uses may reduce population densities and biomass, viability at the watershed-scale remains strong and the overall trend appears to be stable or upward on ARNF.

Brown trout – Species occurs in most watersheds of the Arapaho and Roosevelt National Forests. While the species has been the dominant trout species in large streams (e.g., Poudre River), the species appears to have expanded its range in some watershed. While land uses may reduce population densities and biomass, viability at the watershed-scale remains strong and the overall trend appears to be stable or upward on ARNF.

Greenback cutthroat trout – Recent genetic studies published in 2007 and 2012 identified major issues with the scientific understanding of cutthroat trout genetics on the east slope and west slope of Colorado. These published findings strongly indicate that there are no currently existing populations of the aboriginal cutthroat trout on the east slope of the ARNF. While cutthroat populations still occur on the eastern slope of the ARNF, the genetic origins of these fish are from various areas of the Colorado River Basin.

Colorado River cutthroat trout - Recent genetic studies published in 2007 and 2012 identified major issues with the scientific understanding of cutthroat trout genetics on the eastslope and westslope of Colorado. These published findings indicate that there are 2 genetic groups of cutthroat trout currently occurring on the western slope of the ARNF. While breeding populations of both types of fish are low, population trends appear to be stable on ARNF.

Plains topminnow –Species occurs on the PNG and has been declining within the species native range. Long-term drought and development on Colorado's eastern plains may be related to the declines. Regular monitoring for the species on the PNG shows that the species is still present in some areas, but has been absent from other areas for nearly a decade. The population trend appears to be declining on the PNG.

Plains killifish - Species occurs on the PNG and is understood to be common in portions of eastern Colorado. While population trends appear stable across the species range, the observed occurrences have been in decline on the PNG. The population trend appears to be declining on the PNG.

MIS Habitat Changes

Updates to ARP basic resource inventories and databases are in progress (vegetation type and structure; aquatic habitat type and structure; roads/trails and use; present amounts and locations) and are necessary for assessing relationships between MIS population trends and habitat changes.

It should be noted that these basic forest and grassland vegetation data are also needed to adequately manage and monitor many resources and programs within the ARP. Assuring reliable data and updates is a fundamental requirement for Forest Plan implementation. Currently, resource condition data updates are not adequate to ascertain whether expected Forest Plan outputs and effects are on track.

Effects Of Off-Road Vehicles - 36 CFR 219.21(g)

This CFR requires evaluation of the potential effects of vehicle use off roads to protect land and other resources, promote public safety, and minimize conflicts with other uses of National Forest System lands.

The unauthorized use of Off-Highway Vehicles (OHVs) (a.k.a, Off-Road Vehicles) within the ARP is mixed story. The Motor Vehicle Use Map (MVUM) provided to visitors and the increased violation notices issues has helped with unauthorized use. Some increase is driven by the large population living within one hour of many parts of the Arapaho and Roosevelt National Forests and Pawnee National Grassland and this increase is also driven by the increase in the technological capabilities of OHVs and the increased marketing and sales of them. Some Districts are experiencing an increase or unauthorized routes in new locations. Other Districts have been able to increase on-the-ground signage, built buck-and-rail fences and emphasized public education. These Districts have seen a slight decrease in unauthorized use. One new issue is the explosion of illegal UTV (vehicles exceeding 50") use. These UTVs are using trails which are limited to vehicles 50" or less. This is causing resource damage.

District MVUMs and the Forest Plan contain appropriate guidance to address this problem. Therefore, the solution to unauthorized use does not mean the Forest Plan needs to be changed. What is needed is first a social change relative to use of National Forest System lands by the public. The National Forests have long been viewed as the Nation's playground where most activities are permissible. However, in National Forest lands adjacent to large urban areas, this type of use may no longer be possible. The second need is increased funding. Unlike the need to reduce hazardous fuels, where catastrophic wildfires each year provide graphic examples of the need for hazardous fuels treatments, the adverse effects from unauthorized OHV use are more insidious. The adverse effects from this unauthorized OHV use are immeasurable on a larger scale over a time period of one, five, or even ten years. The ARP has had limited funding to deal with solutions such as increasing field presence of Forest Service personnel.

In addition to MVUMs and tools such as on-the-ground signage, buck-and-rail fences and emphasized public education, there have been successes in OHV and other motorized recreation management. On the Pawnee National Grassland, we have been aggressively planning our grassland transportation system and have closed or decommissioned roads that were no longer needed. Many of the ranger districts on the Arapaho and Roosevelt National Forests have some designated dispersed camping areas, improved signing, and installed buck and rail fences to direct the motorized recreation visitor. Many volunteer projects with jeep and ATV clubs have improved safety and rehabilitated degraded resources.

There are many large and small areas that have been designated and managed for off-highway vehicles (OHV's). On the Pawnee National Grassland the Main OHV Area serves as the OHV focal point on the grassland and receives use throughout the winter when other areas are snowed-in. On Sulphur Ranger District, there is the Stillwater OHV Trail System, which provides a variety of road and trail connector routes for a comprehensive and varied OHV experience. On the Canyon Lakes Ranger District there are some small and several large areas with well established and managed OHV routes. These include The Roach, Cherokee Park, Chicken Park, Deadman, Crown Point, Crystal Mountain, Pole Hill, Johnny Park,

and Pierson Park areas. The Districts also have a high quality publication with maps of these areas titled "Canyon Lakes Ranger District, Roosevelt NF, OHV Routes" in addition to their MVUM.

Below, are some of the more visible resource effects of OHVs and motorized recreation use.

WILDLIFE:

There is more off-road use or use of unauthorized roads (identified as "ways" in the Forest Plan, basically, user-created roads) than estimated in the Forest Plan. Accordingly, this may result in higher amounts of human disturbance to both wildlife and their habitats, than predicted in the Forest Plan. Forest-wide, measures have been taken to decrease the miles of open roads (authorized or not) and the amount of damage to habitats. A forest-wide effort is underway to determine the minimum road system that is required for the ARP. This document will help to prioritize opportunities for the management of roads and various uses of roads, including OHV use. Other examples include rerouting and restoration of roads/trails to make them accessible to recreators while still being sensitive to the resources. In addition, through the fuels reduction and timber salvage (due to mountain pine beetle epidemic) planning processes, interdisciplinary teams are using this opportunity to look at the transportation systems across large landscapes and identifying/ analyzing the actual needs. To implement rehabilitation projects, several disciplines are pooling resources (money/people/time) to accomplish several objectives and stretch limited funds. Although strides are being taken, the issue is far from manageable and as public use of the forest increases, it will be difficult to control unauthorized use.

WATERSHED AND FISHERIES:

Off-road vehicle use, of both roads and trails as well as unauthorized use off designated travel-ways, continues to be a significant chronic source of erosion and sediment that degrades water quality and fish habitat throughout the Forest. These impacts can ultimately result in fewer fish and unhealthy populations of wild trout within the affected stream (e.g., Jenny Creek area of the Boulder Ranger District. Increased vegetation management has the potential to contribute to this as temporary roads and trails are used to access project areas. It is difficult to effectively close these roads from OHV use following vegetation removal, and some can become additional unauthorized trails. Both authorized and unauthorized off-road vehicle use is expected to continue to increase, creating additional degradation and impacts to water and fish resources.

Areas of particular concern are those areas such as the Left Hand Canyon and Bunce School areas on the Boulder Ranger District, where concentrated use has denuded much of the area of vegetation. Most of the planned rehabilitation efforts have been completed in the Left Hand off-highway vehicle (OHV) area to repair damaged areas. However, in 2012 a flood in Carnage Canyon, within the OHV, disturbed some of the channel and riparian area restoration effort that had been accomplished. Temporary stabilization treatments were implemented, and assessment to determine whether further followup work would be useful will be accomplished in 2013 In addition, several unauthorized hillclimbs in the Bunce School area were fenced and rehabilitated.

Watershed improvement projects that reduce the impacts of off-highway vehicle use have provided for incremental improvements in water quality and aquatic habitat. Developed off-road vehicle trail systems, such as the Left Hand OHV area on the Boulder Ranger District and the Stillwater OHV area on the Sulphur Ranger District provide a template for providing a desired user experience while maintaining acceptable resource conditions.

Additional work has been planned on the Boulder Ranger District. The Jenny Creek Trail re-route and stream restoration project is scheduled to occur in 2014. This project will relocate nearly 1 mile of the existing trail from the creek bottom up to the mid-slope, where it should have fewer resource concerns. Additional areas that could be improved include Sevenmile Creek and Green Ridge Trail areas of the Canyon Lakes Ranger District.

RECREATION:

Potential effects from OHV use include soil erosion and siltation of water courses, displaced wildlife due to noise and traffic movement in the forest, wildlife habitat impacts to vegetation, soil and water, and impacts to other recreationists from noise, dust, speed, obnoxious behavior, off-road use, and collision potential with other vehicles, horse riders, mountain bikers, hikers, etc.

Much progress has been made to direct motorized use on the ARP as well as the associated dispersed camping that often occurs with the use. Toilets have been installed to address human waste issues and buck-and-rail fences were installed to confine much camping and motorized use to road, trail and hardened surfaces to prevent damage to soil, water and vegetation resources. Information kiosks at major ARP entry points and trailheads and other signing and have been installed to help users know where they are and which routes to stay on as well as to impart a Tread Lightly message.

In 2003 the Chief of the Forest Service identified unmanaged recreation, and specifically OHV use, as one of the four major threats to sustainable forest health. As a result, on November 9, 2005 the "Travel Management: Designated Routes and Areas for Motor Vehicle Use Rule" (aka Travel Rule) was finalized in the Federal Register. This rule requires the Forest Service to designate a system of roads, trails, and areas open to motor vehicle use by season and vehicle type. The public has had, and will continue to have, full review of preliminary inventory and maps. This designation is completed via publication of a Motor Vehicle Use Map (MVUM), which will be printed annually and updated as often as necessary. After MVUM's have been printed, it is a violation of Forest Service regulations to use or possess a motor vehicle anywhere not designated on the MVUM.

By the end of 2010, all Districts on the ARP had completed their road/trail inventories and published their MVUMs.

Forest Closure Order No. UFC-01-13 (Urban Front Country Occupancy & Use, approved on 6-30-13) prohibits "using a motor vehicle off of National Forest system roads except snowmobiles operating on at least six inches of snow" and "using any type of vehicle on any National Forest system road or trail except those vehicles that are allowed by signing on that road and trail." The order also lists, by Ranger District, specific roads and trails closed to motorized vehicle travel, year-round and seasonally. Districts are implementing the above closure order, as well as implementing the MVUM and planning for any needed additional closures and opportunities for motorized travel. The order is nullified for motorized travel designations when each District published its first MVUM.

HERITAGE RESOURCES:
Off-road vehicles present a major problem for cultural resource sites. The creation of social (not designed, engineered, or constructed by USFS) trails and roads are not subject to planning or cultural resource inventories before they are utilized and have the potential to adversely affect prehistoric and historic cultural resources. These detrimental effects are generally not reversible and are found only after they have occurred.

Effects To Lands And Communities Adjacent To Or Near The National Forest And Effects To The Forest From Lands Managed By Government Entities - 36 CFR 219.7(f)

This CFR requires that the effects of National Forest and Grassland management be considered as it affects resources and communities adjacent to or near the ARP.

The most obvious effects to communities occur during wildfire outbreaks. Over the first six years of Forest Plan implementation, the ARP was in drought conditions. These conditions led to numerous wildfires, which unfortunately consumed not only publicly owned resources but also private structures and property. To address this situation, the Forest Service launched an effort to treat the hazardous fuels, which have built up over years of fire suppression and reduced vegetation management activities. The Front Range Fuels Treatment Partnership has been in effect since 2002 and is an active partnership of public, state, local agencies and private landowners. Budgets have been increasing on the ARP to deal with these hazardous fuels, especially near the intermix lands of public/private ownership. By the end of fiscal year 2007 hazardous fuel reduction planning has been completed on almost 80,000 acres. Between 2002 and 2007 over 39,000 acres had been treated to reduce hazardous fuels on the mountain districts, primarily in the wildland urban interface. In 2012, 13,313 acres were treated to reduce hazardous fuels on the Forest.

In addition to hazardous fuels reduction adjacent to communities, the Forest cut hazardous trees along road, trails, powerlines and in developed recreation sites. Treatment was completed along more thn 98 miles of road and 50 miles of trails. Projects included roadside hazard tree work in partnership with the Colorado Department of Transportation on Berthoud Pass (US Highway 40) and Colorado Highway 125, and along some 76 miles of roads near Grand Lake and Winter Park on the SRD, along the Long Draw Road on the CLRD, and near the Brainard Lake Recreation Area on the BRD.

Insect outbreaks such as those around Lake Granby are changing the look of the forested lands from green live trees to orange or grey dead trees. Many private homes are located in or near these mountain pine beetle infested areas. All mountain districts on the ARP are implementing projects to treat beetle-infested trees. Through public involvement these homeowners and other interested publics and agencies helped to determine the best method to treat this infestation.

Recreation is the other obvious large impact on communities near or adjacent to the National Forests and Grassland. Communities reap many benefits, both economically and socially, from visitors to the ARP. However, there are also impacts to these communities when excessive or inappropriate visitor use affects these communities' quality of life (crowding and water quality). The ARP has been working with these communities and private landowners to minimize impacts and maximize economic benefits.

Comparison Of Projected And Actual Outputs – 36 CFR 219.12(k)1

This CFR requires a quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan.

WILDLIFE:
Since 1998, there has been a upward trend in acres of habitat improvement for all wildlife, including Threatened, Endangered or Sensitive species (TES) and habitat. Outputs have been'near-expected' relative to budget levels. The following describes aspects that comprise the habitat treatment acres.

- Improved habitat treatments due to hazardous fuels management has been substantial, making up about half of the acreage accomplishments. Hazardous fuels treatments can be largely beneficial and Forest Plan habitat objectives can be met faster than expected if wildlife objectives are adequately designed into hazardous fuels treatments. The ARP has anticipated the increased fuel treatment program and has correspondingly adjusted biology staff .
- Old growth of all conifer types has been largely retained over the past 15 years, except in areas of the MPB epidemic. Development of more, future low-elevation old growth is being best assured by reduction of forest fuels in hazardous fuels treatment areas along the Front Range and by acquisition of low-elevation lands by the Forest Service in the Evergreen, Colorado area. Since 2002, an average of 7,600 acres of hazardous fuels have been treated. More low-elevation old growth (ponderosa pine (PP) and Douglas-fir (DF)) is being found than was known at the time of the Forest Plan revision (1997). Newer aerial photos (taken since insect epidemics) are providing a more complete and reliable inventory of the locations of PP and DF old growth. Pre-project and specific old growth condition surveys to field truth many PP/DF old growth sites are confirming and/or comparing recent photo interpretation findings. An entire inventory along the Front Range was completed in FY03 to assure that locations are known, and to allow for planning and implementation according to Forest Plan direction. The recent inventory located additional sites that were previously undetected, but also ascertained that PP/DF old growth still remains the most limited type of old-growth forest within the ARNF. However, with the MPB epidemic, old growth lodgepole pine forests may be at risk. There are approximately 183,000 acres of LPP on the Sulphur Ranger District (SRD). As of 2012 the epidemic has affected all of these acres. It is estimated that approximately 80 percent of the LPP over 4" in diameter have been killed by the MPB on these acres. It is likely that at least 90% of the LPP over 4" in diameter on the District will eventually be killed by MPB.
- Mountain pine beetle impacts on the Canyon Lakes, Boulder and Clear Creek Ranger Districts east of the Continental Divide increased in 2012, but are not yet as extensive as west of the Divide. However, it appears that the MPB are spreading and over the next 5 years it is anticipated that tree mortality will occur in substantial areas of the LPP stands on these districts.
- TES habitat improvements for wildlife, fisheries, and rare plants have mostly achieved the expected Forest Plan objective of 3 projects per year collectively.
- Riparian/habitat restoration, as well as road closures and obliterations, have increased due to hazardous fuel reduction funding opportunities. Internal partnering with the watershed and soils programs as well as increased funding from external partners has also increased our capacity to achieve results in these areas.
- Expectations of structural improvements and habitat protection have not been fully realized due to limited funding and other priority habitat treatments.
- Aspen regeneration and reduced conifer encroachment in openings have mostly been realized as expected through design of fuels/timber management projects. However, enhancement of aspen has occurred as independent wildlife projects.

FORESTED RESOURCE:
The Allowable Sale Quantity (ASQ) for the first decade is approximately 67 mmbf (135,000ccf). Timber sold in the first decade was approximately 135,000 ccf. Over 92,000 ccf was sold on the Sulphur Ranger

District with over 75,000 ccf of salvage associated with the mountain pine beetle epidemic. Future timber harvest on the Sulphur Ranger District is anticipated to primarily be salvage of lodgepole pine killed by MPB. Once the merchantability of the MPB killed lodgepole pine is reduced the volume sold on this district will diminish substantially. In FY 2011, 31,154 ccf of timber was sold on the ARP.

Timber volume sold on the Front Range Districts, primarily the Canyon Lakes and Sulphur Ranger Districts has been at levels below the ASQ. However, implementation of the Front Range Long Term Stewardship Contract (LTSC) has expanded timber volume sold from Boulder Ranger District. The LTSC, a timber sale purchased off the shelf on the SRD, and small sales and personal use permits did allow for sale of 39,613 ccf in FY12. Historically from 2004 through 2008, sales with approximately 40,000 ccf of volume were offered, but received no bids on the Canyon Lakes Ranger District. At this time there is no reason to revisit the ASQ.

RECREATION:

Comparisons of projected vs. actual outputs show Forest Plan objective estimates are high and actual accomplishments are low for:

- Reconstructing or rehabilitating dispersed camping areas.
- Providing new designated wilderness campsites (no actual target)
- Constructing new dispersed-use campsites

This discrepancy in output vs. accomplishment vs. budget availability indicates that these Forest Plan listed objectives are not all-inclusive of the full scope of the recreation program and, in fact, represent just a minor portion of the work involved. In addition, lack of accomplishments in these areas reflects other higher priorities.

- Recreation Special Uses, Heritage, Interpretation and Visitor Information Services, Landscape/Scenery Management., and Accessibility programs are also subsets of the overall recreation program as are Developed Recreation, Wilderness and General Forest Areas.
- Maintenance activities were not recognized as high importance (no objectives) but new construction, reconstruction, and rehabilitation were. However, funds for new construction are very limited. A lot of the work of the Recreation program involves maintenance, yet it has no Forest Plan connection for tracking these accomplishments.
- Public contact for information, education, prevention and enforcement purposes is very important and a desired workload.
- Interpretation and education functions are also important but not part of our Forest Plan monitoring system.
- Volunteer coordination is a function that results in some kind of recognized reportable activity but is rarely viewed as an activity unto itself, yet much of our dollars and efforts are spent working with volunteers.
- The allotted budget for the Recreation program is below predictions shown in the Forest Plan. The program has been funded at less than one half of the Forest Plan projections. Yet, the ARP is one of the top five most heavily visited National Forests/Grasslands in the Nation.

RANGELAND RESOURCE:

A. *Comparison of Projected and Actual Outputs – 36 CFR 219.12(k)1*

1. Cattle Grazing (M AUMs)

	Use (in thousands)	Planned Level	Permitted Level	2012 Actual Level	Percent of Permitted Level
National Forest					
Active Allotments		**31**	**31**	**31**	**100%**
Cattle Grazing	Head-Months	9.5	8.3	5.9	71%
	AUMs	11.4	10.4	7.6	73%
National Grassland					
Active Allotments		**146**	**146**	**145**	**100%**
Cattle Grazing	Head-Months	60.1	39.5	37.4	95%
	AUMs	79.3	52.2	49.0	94%
TOTAL NFS					
Total Grazing	Head-Months	69.6	47.8	42.1	88%
	AUMs	86.6	62.6	53.2	85%

Most operators were able to run a majority of their permitted numbers. Allotments were stocked (AUMs) at about 61% of planned-level capacity, but at about 72% of permitted levels on the Forest and 85% of permitted levels on the Grassland.

2. Grazing Permits – the Forest Plan projected issuance of 56 livestock grazing permits. The Forest currently has 28 active grazing permits. The Grassland has two Grazing Agreements issued to the two grazing associations, who in turn issue permits to their 86 members; the Pawnee Ranger District also issues 10 direct permits on the Grassland. Total number of current term grazing permits issued by all Units is 40.

B. *Comparison of Estimated and Actual Costs – 36 CFR 219.12(k)3*

2012 Rangeland Management Budget (thousands of dollars)

Activity	Plan Level Budget	2012 Final Budget	Percentage of Planned Level
Rangeland Vegetation Management (NFVW)	370	135	36%
Grazing Permit Administration (NFRG)	570	306	54%
Rangeland Resource Improvement (RBRB)	48	2.1	4%
TOTAL	988	443.1	45%

NFVW – Congress has reversed a decade-long upward trend, and is now funding NFVW at rapidly decreasing levels (the rangeland vegetation portion of that Budget Line Item, which also includes soils and watershed management, air quality, reforestation, and thinning) – for five consecutive years; funds necessary to conduct noxious weed control work and to manage non-native species have been particularly hard-hit by the Regional effort to re-mix appropriated funds to cope with the bark beetle infestations.

Most of the noxious weed management work is focused in pass-through cooperative monies to the Counties. About 20% of the identified NFVW funds (rangeland vegetation portion only) are committed to weed management. The remainder pays for allotment/NEPA inventory and analysis efforts for all functional specialists, and for monitoring of rangeland vegetation by rangeland management specialists. In the last four years, any changes in funding at the national level are resulting in significant reductions at the field level. Re-directed funds for managing trees killed by the bark beetle epidemic, including those different priorities for employees' time, has cut the rangeland vegetation funding in half in the last three years.

NFRG funding pays for final NEPA analysis and decisions as well as allotment and permit monitoring, and the implementation of NEPA decisions. Congress has increased NFRG funding by an average of approximately 3-5% in recent years in order to accelerate allotment planning efforts to meet the required 1995 Rescissions Act schedule. While most of that funding increase made it to the Forest/Districts in 2003, incremental increases as well as additional funding levels were retained at higher organizational levels in 2004 - 2009. The funding is now trying to hold level at the Forest and Ranger District level, but the bark beetle emphasis continues to result in some fall-down in target completion. Funding is currently only about 56% of what the Plan predicted was needed to implement it in full.

Rangeland resource improvement dollars (returned from collected grazing fee receipts) fluctuate slightly each year as a result of authorized grazing levels (in number of head-months) the previous year.

Prescriptions and Effects – 36 CFR 219.12(k)2 and Effects of Management Practices - 36 CFR 219.11(d)

These CFRs require evaluation of prescriptions and effects and management practices and require reporting of any significant changes in land productivity.

TRANSPORTATION SYSTEM:
Some of the Forest-wide goals and objectives have been met and others are not being met on an annual basis. See page 8 of the Forest Plan. Human Uses Objectives 6 and 9 need to be reevaluated for their continued appropriateness considering National trends and new transportation system management philosophies. Yearly budget allocation, competing priorities for the ARP as well as the long public process to bring polarized users into grudging agreement substantially lengthens the planning process.

Effectively closing roads is a problem. Many closures are illegally reopened or detoured around to obtain access. These point to a need for greater field and law enforcement presence.

WATERSHED:

Effects of management – Watershed conservation practices found in the 1997 Revised Forest Plan standards and guidelines have largely been effective in protecting water and riparian. In 2005 the regional Watershed Conservation Practices Handbook was updated for clarity and increased utility. Monitoring of the previous conservation practices has indicated protection or improvement of resource conditions for a variety of projects. Where conservation measures were found to be ineffective, it was typically because they were incorrectly or not applied, or because activities occurred during implementation that were not foreseen during project planning, so that appropriate conservation measures were not prescribed.

The Forest Service published a National Best Management Practices (BMP) Technical Guide in 2012. The guide provides standard monitoring methods for most typical management activities that affect watershed condition. In addition to the use of the monitoring methods for project level monitoring, the intent of the guide is to provide standard monitoring methods at the national level that will facilitate the use of statistical analysis to determine the implementation and effectiveness of BMP's across the National Forest system. We anticipate that BMP monitoring and reporting will become a target for the Forest in 2013 and thereafter.

Soil disturbance classification transects on vegetation management treatment units indicate that, on a small proportion of treatment units, harvesting and site preparation techniques caused detrimental soil disturbance exceeding 15% of the activity area (Forest Plan Standard #19, p. 14). Slash disposal through pile burning or chipping has emerged as a concern and has been monitored in recent years. The approximate spatial extent of these impacts is variable and is documented as part of analysis required for project planning. Ongoing monitoring should be conducted to determine the frequency, degree and extent of these findings. Recommendations to avoid and/or mitigate detrimental soil disturbance are based on monitoring information.

LANDS:
Fuels funding has supplemented the boundary budget to enable some accomplishment to meet Forest Plan objectives for conflict free boundaries. In addition, the Forest Surveyor is moving ahead the landline program. The district lands staffs have decreased the special use authorization backlog, though a backlog still exists. The ARP has been emphasizing obtaining legal access across private lands.

RECREATION:
Hazardous fuels reduction projects and wildfires can open up forest stands and facilitate motorized vehicle access to areas previously inaccessible due to the dense nature of the pre-burned or pre-thinned forest stands. When appropriate, travel management effects from thinning and other fuels reduction prescriptions need to be fully considered in the environmental analysis for hazardous fuels reduction projects. Recreation/ transportation monitoring after completing hazardous fuels reduction projects or wildfires is necessary to ensure that the effects from increased access caused by the opening of forest stands are mitigated.

The mountain pine beetle epidemic, starting on the Sulphur Ranger District and moving to the other mountain ranger districts, has increased the amount of dead trees in developed recreation sites. This can pose a hazard to visitors. Prevention (spraying) and mitigation (tree removal) of these hazard trees is an ongoing process and is a substantial cost to the ARP recreation program.

RANGELAND RESOURCE:
1. Rangeland Inventories

All rangeland acres were inventoried and analyzed in preparation for Rescissions Act allotment planning efforts by 2010. No additional long-term condition and trend inventories were completed in 2012, although re-analysis efforts may begin in the next 2-3 years.

2. Allotments Analyzed and Decisions Implemented

Two Pawnee allotment/NEPA decisions were further implemented in 2012.

3. Allotments Administered to Standard

Allotment Management and Administration

Area	Total Number of Active Allotments	NFS Acres in Active Allotments	Allotment Acres (also vacant) Administered to Standard -- 2012	Percentage Completed in 2012
Forest	31	285,859	172,348	60%
Grassland	145	199,257	159,401	80%
TOTAL	176	485,116	331,749	68%

4. Rangeland Monitored and Evaluated

Rangeland Vegetation Monitoring

Area	Acres with Rangeland Vegetation Objectives	Rangeland Acres Monitored in 2012	Percentage Monitored in 2012
Forest	95,460	76,330	80%
Grassland	196,289	0	0%
TOTAL	291,749	76,330	26%

AIR:
The long-term synoptic lake sampling program is in its eighteenth year and this data is being used to assess air quality impacts in Wilderness Areas. The Forest Service Regional Office in PSD permit reviews also used this data.

An ozone monitoring program was established in 2007. Three active samplers are located within the Front Range Air-shed. Two of these samplers are located on the Pawnee National Grassland due to non-attainment of air quality standards in that area.

All necessary permits related to prescribed fire and emissions were submitted and approved by EPA and the State of Colorado and generally all conditions of the permits were met.

HERITAGE RESOURCES:
The overriding goal of the Heritage Resources program is to identify, evaluate, preserve, protect and enhance heritage resources. The program is divided into two elements: *compliance*, or work related to Section 106 of the National Historic Preservation Act (NHPA), and *program*, or activities related to Section 110 of the same law. Compliance work such as evaluation and monitoring is funded by the benefiting resource program. For example if archaeological surveys are done for a proposed timber sale, it

is the timber program that funds the surveys. Other compliance work includes input into fuels reduction and timber sale analyses, range allotment management plans, road construction activities, etc

There are no goals, objectives, standards or guidelines for the heritage resource in the Forest Plan. However, in Forest Service Manual 2360 for Heritage Resources there is specific management direction, which the ARP is directed to follow. Additionally, much of what guides the work done in this area is guided by law. However, laws do not cover all aspects of the heritage resource program and it is left up to the individual line officer to decide what work will be done. There is no funding for project monitoring, thus, it has not been determined how well mitigation direction is being followed as stated in the project NEPA documents.

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Table 4.2 Forest Plan Monitoring Questions for Priority Management Emphasis and Stakeholder/Public Involvement.

The following questions are displayed in Table 4.2 (Forest Plan, pages 394-396). These questions address priority management emphasis, goals and objectives in Chapter 1 of the Forest Plan. As described in Chapter 1, page 3 of the Forest Plan the ARP has an overall mission to achieve over time; **Forest-wide management implementation must balance the demands of people's vastly different resource-use values with maintaining ecosystem health.** To focus the ARP management towards meeting this mission the Forest Plan identified three management emphasis areas: 1) biological diversity, ecosystem health and sustainability; 2) human use; and 3) land use and ownership. The following questions fall into one of these three areas.

Priority Management Enphasis: Biological Diversity, Ecosystem Health, Sustainability

General: Successional - Structural Stages	Have the Forests and Grassland made progress toward assuring adequate representation of the full range of successional or structural stages of community types across the forest and grassland landscapes? How has the representation of successional stages been accomplished? (Biodiversity; General - Objective #12)

On the ARNF, increases have occurred in early forest successional stages from management treatments and natural events (primarily wildfire and mountain pine beetle infestation) in young- to mature-forests. The ARP emphasis on restoration and hazardous fuels treatment is making this possible for the most part as well as the continuing MPB epidemic. The increase of early stages has occurred while old growth forests were generally retained Forest-wide.

An exception to this is in lodgepole pine stands. As discussed previously mountain pine beetles (MPB) have killed large areas of mature lodgepole pine including old growth lodgepole pine stands. The Forest Plan goals for age diversity in lodgepole pine can not be achieved due to the MPB epidemic. However, this is a natural process in lodgepole pine and will create large expanses of lodgepole pine and aspen seedlings.

Old growth of all conifer types has been largely retained over the past 15 years, even with recent wildfires except in areas of the MPB epidemic. Development of more, future low-elevation old growth is being best assured by reduction of forest fuels in fuels treatment areas along the Front Range and by acquisition of low-elevation lands by the Forest Service in the Evergreen, Colorado area. Implementation of treating high fire hazard acres is continuing, which allows us to achieve the Forest Plan objective of treating about 7000 acres per year. More low-elevation old growth (ponderosa pine (PP) and Douglas-fir (DF)) is being found than was known at the time of the Forest Plan revision (1997). Newer aerial photos (taken since insect epidemics) are providing a more complete and reliable inventory of the locations of PP and DF old growth. Pre-project surveys to field truth many PP/DF old growth sites are confirming and/or comparing recent photo interpretation findings. An entire inventory along the Front Range was completed in FY03 to assure that locations are known, and to allow for planning and implementation according to Forest Plan direction. The inventory located additional sites that were previously undetected, but also ascertained that PP/DF old growth still remains the most limited type of old-growth forest within the ARNF. The MPB continues to move east of the continental divide. With epidemic levels of MPB being reached in this area, there may be adverse affects to mature stands of ponderosa pine, limber pine, and bristlecone pine.

On the PNG increases have occurred in grassland mid-structure grasses especially due to several wet seasons. Revised grazing management plans for the Grassland will best assure both short-grass and mid-grass stages. The short-grass structural stage is adequate for nesting mountain plover (a previously proposed threatened species that was recently withdrawn from proposed listing), and the mid-grass structural stage is necessary for nesting lark buntings (a regionally declining species).

General: Ecological Processes & Human Influences	Has progress been made toward improving Forest and Grassland wildlife habitat and watershed condition through modification of system roads, trails and ways? How has this been accomplished? (Biodiversity; General - Objective #1)

WATERSHED CONDITION:
While roads continue to be one of the major sources of sedimentation and cause other impacts to streams and riparian ecosystems on the Forest, some progress has been made in reducing these impacts. Nearly all roads affect soil and watershed processes by providing continuously bare ground that serves as a source of erosion and by providing compacted areas that produce and concentrate surface runoff, and so, a reduction in roaded area tends to benefit soil, water and aquatic resources. Roads that have the greatest impact to watershed resources are those that are located immediately adjacent to or in stream channels. Consequently, the greatest benefit is from the obliteration or relocation of those roads. Road decommissioning work continues on the Sulphur Ranger District. An additional 20 miles of roads were decommissioned in 2012 in the Willow Creek watershed, to bring the total of roads decommissioned on the district to more than 100 miles. Four miles of road were also decommissioned on the Canyon Lakes Ranger District in 2012. It should be noted that hundreds of miles of roads adversely impacting watersheds remain and that while the Forest has annually decommissioned roads, we have been only partially successful in reaching the Forest Plan objective of decommissioning approximately 44 miles of road per year.

WILDLIFE HABITAT:
Some progress has been made toward improving wildlife habitat through modification of system roads, trails and ways. However, the progress made is less than full implementation of the Forest Plan. There is more off-road use or use of unauthorized roads (identified as “ways” in the Forest Plan, basically, user-created roads) than estimated in the Forest Plan. Accordingly, this may be resulting in higher amounts of human-disturbed wildlife habitat than predicted in the Forest Plan. Closing of certain Forest Service roads and “ways” that have established use is at times unsuccessful. Gaining public support for closing travelways is difficult. Numbers of unauthorized routes appears to be increasing every year. An average of 30% of the expected Forest Plan objective of 44 miles of closures per year (Forest Plan, p. 4) is being realized that improve habitat effectiveness.

However, some positive measures have been taken to improve the on-going issues of travel management and wildlife. A forest-wide effort is underway to determine the minimum road system that is required for the forest. This document will help to prioritize opportunities for the management of roads and various uses of roads. Other examples include rerouting and restoration of roads/trails to make them accessible to recreators while still being sensitive to the resources. In addition, through the fuels reduction and timber salvage (due to mountain pine beetle epidemic) planning processes, interdisciplinary teams are using this opportunity to look at the transportation systems across large landscapes and identifying/ analyzing the actual needs. To implement rehabilitation projects, several disciplines are pooling resources (money/people/time) to accomplish several objectives and stretch limited funds. Although strides are

being taken, the issue is far from manageable and as public use of the forest increases, it will be difficult to control unauthorized use. Districts are undertaking extensive rehabilitation and law enforcement efforts in the Left-hand Canyon area of the Boulder Ranger District. In addition, the Sulphur and Canyon Lakes Ranger Districts have incorporated hundreds of miles of road closures into their planning processes and have signed decisions that incorporate those closures. All across the forest and grasslands, specialists are pooling their time, personnel, volunteers, and money to accomplish projects that restore and protect a variety of important resources, including TES habitats. At the forest level, the on-going development of Motor Vehicle Use Maps for each district will direct forest users to authorized and legal roadways.

General: Old Growth	Have old-growth quantity and quality been maintained and have management activities assured adequate/sufficient old growth for the future? How has this been accomplished? (Biodiversity; General - Objective #2) (36 CFR219.)

Old growth forest quantity and quality have been maintained, and adequate/sufficient old growth is assured in the future except in areas of MPB epidemic as previously discussed. In 2002 the ARP acquired approximately 2700 acres in the Evergreen, Colorado area from the City of Golden (Beaver Brook acquisition). This land serves as an important wildlife refuge and as one of the last remaining intact low-elevation, forested ecosystems along the Front Range of Colorado and it offers a high potential for landscape restoration of lower montane ecosystems and to promote low-elevation old growth.

On the west side of the Forest, the Forest Service has acquired lodgepole pine old growth through the Wedge Parcel/Fahy Parcel land exchange. This property is located between the congressionally designated Bowen Gulch Protection Area and the western boundary of Rocky Mountain National Park. The acquisition of this property assures that important old growth will be developed.

In addition to land exchanges/acquisitions, vegetation management has contributed to increased amounts of old growth. Development of future low-elevation old growth is occurring by reduction of forest fuels in fuels treatment areas along the Front Range. Implementation (of fuels reduction projects) is underway which will allow us to achieve the Forest Plan objective of treating about 7000 acres of high fire hazard per year. Due to increased awareness and survey efforts, more low-elevation old growth (ponderosa pine (PP) and Douglas-fir (DF) is being found than was known at the time of the Forest Plan revision (1997). Newer aerial photos are providing a more complete and reliable inventory of the locations of PP and DF old growth. Pre-project surveys to field truth many PP/DF old growth sites are confirming recent photo interpretation findings. An entire inventory along the Front Range was completed in FY03 to assure that locations are known, and to allow for planning and implementation according to Forest Plan direction. The inventory located additional sites that were previously undetected, but also ascertained that PP/DF old growth still remains the most limited type of old-growth forest within the ARNF.

Recommendation:

- Awareness and application of Forest Plan old growth direction should continue to be a primary objective in any forest treatment project, during both planning and implementation.
- As the mountain pine beetle epidemic progresses, the designation and management of existing and future old growth should be addressed.

General: Threatened Endangered and Sensitive Species	Have habitat-improvement projects resulted in protection, restoration and enhancement of habitat for threatened, endangered and sensitive species? What management practices have been most effective? (Biodiversity; General - Objective #3)

Habitat improvement projects have generally protected, restored and enhanced habitat for TES species. Examples of projects in both protection and enhancement are: installation of barriers and removal of non-native trout from cutthroat streams, enhancement of aspen and old growth stands, prescribed burning to benefit habitats, in particular mountain plover nesting and bighorn sheep habitats, rehabilitation of wetlands, installation of a board walk to prevent trampling of sensitive plants in a wetland, monitoring of Preble's meadow jumping mouse and Critical Habitat, travel management to protect the habitats of lynx, plover, native cutthroat trout, boreal toads, nesting raptors and numerous other TES species across the PNG and ARNF. A site specific Lynx Linkage Area Assessment was completed for Berthoud Pass and provides recommendations for current and future management and improvements.

TES projects by nature are often site-specific, limited in extent, but very important to small populations or to a few individuals. Annual accomplishments have been variable as funding fluctuates from year to year but the minimum level expected for wildlife, fisheries, and Rare Plants (3 projects per year) has always been accomplished or exceeded.

Recommendation: Given the high emphasis for biological diversity committed to in the Forest Plan, increased effort and funding in this area is appropriate. Opportunities include working with partners; accomplishing required NEPA through other project goals and objectives (fuels reduction/timber/recreation), restoring riparian and OHV damaged areas, translocation of native cutthroat into currently unoccupied streams, expansion of current cutthroat habitat by removal of non-native trout, habitat restoration and maintenance for amphibians, raptors and rare plants, and more intensive/inclusive access management (see off-road and travel management discussions), especially in TES habitat.

Air, Soil, and Water: Air Quality Related Values	Is progress being made to move air quality related values from at-risk to a maintenance or higher level of protection? How were related values protected and improved? (Biodiversity; Air, Soil & Water – Objective. #4) (CFR 219.23 e)

The Air Quality Related Values (AQRVs) identified in the FEIS of the Forest Plan are: soil, flora, fauna, water quality, and visibility. Forest personnel have not taken any direct action to improve air quality related values. In general, the forest is a recipient of pollution from adjacent areas. With the exception of prescribed burning, forest activities do not produce large amounts of pollution.

To maintain existing air quality, Forest and Grassland personnel continued to work closely with the Colorado Air Pollution Control Division to meet all applicable state and federal air quality requirements related to smoke emitted during prescribed burning projects.

Progress continues to be made in evaluating baseline conditions for some air quality related values (AQRV's) of forest resources as well as developing ways to evaluate trends in condition for AQRV's.

Control of the Forest's emissions in connection with fuels management activities has been implemented in compliance with the State of Colorado.

Monitoring air quality related values has focused on measuring lake water chemistry in the Class 1 Rawah Wilderness, Indian Peaks Wilderness and the nearby Colorado State Forest land. A total of eight lakes were sampled twice in 2012. Lake sampling was completed with the staff of the Rocky Mountain Research Station (RMRS). Currently, the RMRS is compiling this data for future analysis and publication. Currently, lake water quality data is being used to help assess baseline levels as well as trends in lake chemistry on the forest and how they reflect impacts from off-forest air pollution.

In 2007, ozone monitoring was added to the Forest's air quality program, when five passive ozone monitors were installed throughout high elevation areas of the Forest. In 2012, data from the passive sampling monitoring effort was used to inform the location of active ozone samplers. This monitoring is also being accomplished in cooperation with RMRS.

The ARP continued to work with Regional Office staff and adjacent land managers such as Rocky Mountain National Park to evaluate impacts from increases in ambient ozone concentrations and other pollution and to recommend mitigations to minimize those impacts. Baseline information on high elevation lake water quality, visibility data and other sources of air quality information continued to be used by the Regional Office to provide comment and review of Permits for Significant Deterioration (PSD).

Air, Soil, and Water: Forest Emission Budget	Has progress been made on developing a Forest and Grassland emission budget? How was the Forest emission budget developed? (Biodiversity; Air, Soil & Water - Obj. #5)

Recommendation: Per the tenth year Monitoring report, this objective was determined to be unnecessary and has been eliminated.

Air, Soil, and Water: Functional Watersheds	Has the Forest made progress toward moving sixth-level watersheds from at-risk or non-functional to functional? Which watersheds were improved and how was this accomplished? (Biodiversity; Air, Soil & Water - Objective #7)

This is a deceptively difficult question to answer. The ARP completed a watershed condition assessment for the 1997 revision of the Forest Plan. Watersheds were rated by condition class and the results were displayed in the Forest Plan. Many Forests across the nation had also completed watershed condition assessments. However, each of the assessment methods was developed independently, and while they were useful locally and shared some elements, it was not possible to compare watershed conditions across National Forests because different assessment methods were used. In 2010, the Forest Service developed a Watershed Condition Framework (WCF). This is a nationally consistent approach to assess watershed condition and implement and track watershed restoration. The assessment method developed within the WCF provided a nationally consistent approach for watershed assessment that is comparable across unit boundaries. The ARP completed the WCF watershed assessment in 2011. However, because ARP watersheds were reassessed using a different method, it is difficult to compare the results of the 1997

Forest Plan assessment to the WCF assessment. A comparison of the two assessments is shown in the table below.

Comparison of Forest Plan and WCF Watershed Assessment Results

Watershed Condition		Number of Watershed			
		Class I, Functional	Class II, At-Risk	Class III - Impaired	Totals
Forest Plan	Forest	41	87	19	147
	Grassland	Not Assessed	Not Assessed	Not Assessed	N/A
	Total	41	87	19	**147**
Watershed Condition Framework	Forest	36	69	13	118
	Grassland	23	14	0	37
	Total	59	83	13	**155**

There are a number of reasons why the results of the two assessments provide different ratings of watershed condition for some watersheds.

- Watershed boundaries have changed – Since the Plan revision, the US Geological Survey and the Natural Resource Conservation Service remapped watersheds to provide for national consistency. This resulted in a reduced number of watersheds on the ARP.
- The WCF assessment included all ARP watersheds – For the Plan revision, only watersheds on the Arapaho and Roosevelt National Forests were assessed. For the WCF, both Forest and Pawnee National Grassland watersheds were included.
- Watershed conditions have changed – For example, watershed condition of the North Lone Pine and West Creek watersheds on the Canyon Lakes Ranger District, and the Little Muddy and Crooked Creek watersheds on the Sulphur Ranger District have improved because of improved grazing management. Watershed condition of the Lake Granby watershed has declined because changes in nutrient loading and water clarity in Shadow Mountain Reservoir and Grand Lake have become of concern.
- Methods changed between the two assessments – Changes in the attributes considered in the two assessments changed condition determinations for some watersheds.

As noted above, watershed conditions have been improved in some watersheds. Where conditions have improved enough to change condition classes, the improvement has often been a result of change in grazing practices that have resulted in improved riparian conditions and improved channel stability. Conditions have also declined in some watersheds. As noted above, changes in water quality in the Lake Granby watershed have caused it to be rated as Class III, or Impaired. It is suspected that the declines in water quality are related to urban and rural growth as well as the complex movement and storage of water in Grand County. A partnership of federal, state, and county agencies are studying the problem and trying to determine specific causes and solutions.

A district-wide watershed improvement Environmental Assessment (EA) has been completed for the Pawnee National Grassland. The assessment identifies known watershed improvement needs and watershed improvement projects for the Grassland watersheds. As projects are completed in these watersheds, the condition ratings should improve. The rate that improvement projects can be

accomplished is to a large degree controlled by funding availability. A similar large scale EA has begun on the Clear Creek Ranger District, focusing on the upper Clear Creek basin. A decision is expected in 2013, and implementation will follow.

In 2012, the High Park fire, the largest fire ever recorded on the ARP burned nearly 90,000 acres. The fire burned all or portions of 14 sixth-level watersheds. Increases in flooding, erosion, sedimentation, and debris flows have occurred, and are expected to continue for several years. Treatments to reduce post-fire effects began on both Forest and non-Forest lands in 2012, and will continue in 2013. However, watershed condition has been dramatically impacted by the fire, and those impacts will persist for years. The watershed condition assessment has not yet been updated to reflect the changes to watershed condition in the burned watersheds.

Recommendation: No change to the objective is recommended. Work towards completion of landscape scale watershed improvement EA's for all Ranger Districts. Continue to focus implementation on identifying and completing sufficient watershed improvement within priority watersheds so that improvement in watershed condition can be demonstrated. Continue to implement and monitor Best Management Practices so that Forest activities do not degrade watershed condition.

Air, Soil, and Water: Ecological Land Units	Has the Forest made progress toward moving Ecological Landtype Units from at-risk to a maintenance or higher functioning level? How was this accomplished? (Biodiversity; Air, Soil, & Water - Objective #6) (CFR 219.23 e)

The mapping unit is not the scale where a determination of function is appropriate. This determination generally occurs at the activity area scale during project planning. Forest staffs are working on evaluation of soil conditions and improvement of the implementation of water and soil conservation practices during project activities at this scale.

Recommendation: This objective needs to be re-evaluated in the context of the updated Watershed Conservation Practices Handbook and changed to better address the issues of soil productivity, hydrologic function and watershed health described there.

Air, Soil, and Water: Stream Flows	Has the Forest made progress toward obtaining (through negotiation, trade or purchase) stream flows to sustain aquatic life and maintain stream processes on up to 5 reaches of stream channels? What were the most effective and cost efficient methods? (Biodiversity; Air, Soil & Water - Objective #8)

The Forest has minimally achieved this objective through the completion of an easement with the City of Boulder for the Lakewood pipeline in 2002. No facilities that have required streamflow protection have been authorized or re-authorized since 2002.

Air, Soil, and Water: Non- Point Source Pollution	Has the Forest made progress toward reducing non-point source pollution in Class II and III watersheds and in streams, which are not fully supporting State-designated uses? How has this been accomplished? (Biodiversity; Air, Soil & Water - Obj. #10)

Progress has been made through the implementation of watershed improvement projects, road decommissioning, and abandoned mine reclamation, although the pace has been at the lower end of the 49-160 annual acres listed in the Forest Plan objectives. Watershed improvement was accomplished through projects funded by the watershed, engineering, and abandoned mines programs, as well as projects accomplished with cooperators and volunteers. Roads are a significant source of non-point source pollution on the ARP and road decommissioning is an effective means of treatment.

Determining the effectiveness of improving State-listed streams is more problematic. The State lists stream segments that are not fully supporting State-designated uses in a biennial report that is referred to as the 303(d) list. When the Plan revision was completed, there were 12 stream segments on the Forest that appeared on the list. On the 2006 303(d) list, only 6 stream segments that occur on the Forest were listed. On the year 2010 303(d) list, the most recent list, 17 stream segments that are located at least partially on the Forest were listed. However, the changes in number of listed streams are mostly an effect of changes in the State's listing criteria as well as increased monitoring by the State to identify impaired streams, rather than significant new sources of pollution emanating from Forest lands. The most common reason for impairment for listed streams on the Forest is metals pollution, often a legacy of historic mining on the Clear Creek and Boulder Ranger Districts. While the Forest continues efforts to rehabilitate abandoned mine sites and reduce pollution on National Forest System lands, many old mines that serve as pollutant sources are located on patented mining claims, private lands that are inholdings within the Forests. While abandoned mines on Forest lands certainly contribute to metals loading in impaired streams, and reclamation of these mines reduces metals pollution, it is unlikely that the ARP efforts alone will be sufficient to reduce pollution to levels that would cause streams to be de-listed, particularly in watersheds with high concentrations of historic mining activity.

Various abandoned mine reclamation projects were completed in 2012. Several safety closure projects were completed across the forest to remove access and safeguard physical safety hazards associated with historical mining. The Gamble Gulch Watershed on the Boulder Ranger District was surface water sampled during low and high flows, as well as tailings and waste rock piles to characterize and determine the impacts from historical mining. Within the Leavenworth Creek Watershed on the Clear Creek Ranger District, we have also been analyzing data to identify areas of elevated metals loading from abandoned historical mining activities. By taking a watershed approach, we are able to partner with several federal, state, and local stakeholders within the area, thus allowing us to be efficient and more effective to work beyond our forest boundaries.

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Vegetation: High Fire Hazard	Has the Forest made progress toward reducing the number of high fire hazard, high value, and high and moderate risk acres? How was this accomplished? What was the most effective method? (Biodiversity; Vegetation - Objective #11)

The objective is to reduce the number of high risk/high value, and high and moderate risk acres by 2,000 to 7,000 forested acres annually using mechanical and prescribed fire treatments.

The annual average accomplishment for the 15 years of the Forest Plan is almost 7,000 acres/year and falls within the Forest Plan stated objective. Since 2003 with the development of the Front Range Fuels Treatment Partnership hazardous fuels reduction has averaged over 10,000 high fire hazard acres per year. In FY 2012 almost 13,313 acres were treated on the ARNF.

Priority Management Emphasis: Human Uses

Wilderness	Is the Forest making progress toward providing designated wilderness campsites where resource impacts from users are evident? (Human Uses - Objective 2)

The Forest hasn't added designated wilderness campsites since they were established in the Indian Peaks Wilderness Area in the mid-1980's, and in the Comanche Peak Wilderness Area in 1996. However, the Forest funded an effort in the summer of 2009 to use a National Wilderness Area rapid assessment campsite inventory process to meet the Chief's Wilderness Challenge Element #6.

Developed Recreation	Has the Forest made progress toward providing a mix of facility reconstruction, expansion, and, when possible, new developments consistent with future use projections? Has this been done to assure quality developed recreational opportunities? (Human Uses, Developed Recreation - Objective #4)

Progress has been made. Within the past fifteen years, the following campgrounds were reconstructed: Ansel Watrous, Narrows, West Lake, Sunset (conversion from day use area), Willow Creek, Stillwater, Rainbow, Pawnee and Dowdy Lake. Many other individual campsites were brought into standard for disabled accessibility and several developed campsites were reconstructed using Granger-Thye collections. Many other items were replaced, repaired, or installed such as water and electric lines, new pumps and chlorinator facilities, new picnic tables and fire rings, and some bear resistant food boxes and dumpsters. New tent pad areas were delineated with timbered borders and trails in a few developed campgrounds were hardened. Also, as noted earlier, new developed site construction contracts were completed in 2011at Rainbow Lakes Campground (CG), Brainard Lakes Portal and Sourdough Trailhead (TH). New construction was initiated in FY12 at Pawnee CG and Brainard Lake Day Use Area.

The ARP toilet replacement contract has contributed to at least sixteen new toilets across the Forest. Within the past few years the Sunset Boat Ramp and parking facility were reconstructed and the boat ramp was extended twice and a sailboat "gin" pole was installed at the Stillwater Boat Ramp. A new kiosk was installed on Mt. Evans and the Dos Chappell Interpretive Nature Center building was constructed and opened at the Mt. Goliath Natural Area along the Mt. Evans Scenic Byway. Additionally, the Berthoud Pass Trailhead development and construction project was largely completed in 2010, with minor site rehabilitation work still needed. New toilets were installed in FY12 for Mitchell Lake Trailhead and Niwot Picnic Area in the Brainard Lake Recreation Area.

Within the past several years, West Branch, Rawah, Hewlett Gulch and Lower Maxwell Falls Trailheads were rebuilt. A bridge replacement was installed at Buffalo Creek. The Waldrop Trail bridge in the Brainard Lake Area was reconstructed. A new trail bridge designed for four-wheel drive vehicles on Trail Creek Trail, a new bridge on Sunken Bridges Trail, and a new bridge on the Bakerville-Loveland Trail were installed. Twenty-four miles of new Continental Divide Trail, one mile of new trail on the Grays

and Torreys Peaks trail were constructed and a rerouted trail on the Chicago Lakes Trail was completed. Over the past few years, roadside recreation/travel management kiosks were installed at Stillwater East, Stillwater West, North Supply, Cabin Creek, Young's Gulch and Herman Gulch. In FY11 a trail bridge was completed on the High Lonesome Trail and turnpikes were constructed on both the Flume Trail and the Blizzard Pass Trail.

The ARP Recreation Facility Analysis, part of a national process, was completed in FY 2008, identifying and stratifying top recreation facilities eligible for Recreation Site Improvement (RSI) funding to maintain and improve key sites, and to identify what level of deferred maintenance exists across all ARP recreation facilities and describe which facilities are potentially not essential to maintain into the future.

In FY 2009, the ARP completed an assessment of effects to implement proposals for major facility replacements (toilets, etc.) across the Forests and Grassland via funding from RSI and American Recovery and Reinvestment Act (ARRA) programs. A Decision to move ahead on major facility replacement, based on this assessment, was also completed in FY 2009. Construction on several developed site projects was initiated in FY2010 and several were completed in 2011 and 2012 (discussed above).

Dispersed Recreation	Has the Forest made progress toward reconstructing or rehabilitating impacted dispersed areas and sites, providing new designated dispersed campsites consistent with future use projections? How has this been accomplished? (Human Uses, Dispersed Recreation - Objective #1, #3)

Progress has been made in dispersed recreation sites over the past few years. The Manhattan Road, Long Draw and Lost Lake areas (on the Canyon Lakes Ranger District) have designated-dispersed campsites. Toilets have been installed in the Stillwater backcountry dispersed camping area and at many trailheads across the ARP to reduce human waste issues in these areas.

Restrictions have been established to prohibit shooting and/or overnight use in the Buckhorn Area of the Canyon Lakes Ranger District; Brainard Lake Recreation Area, Left Hand Canyon, Lefthand OHV Area, and South Saint Vrain Canyon of the Boulder Ranger District; the Mt. Evans Road corridor, Barbour Forks area and the Fourth of July Road corridor on the Clear Creek Ranger District and the closure (Sec 7, T8N R63W) on the Pawnee National Grassland. Two developed shooting area proposals were initiated in FY11. One on the Boulder Ranger District for the Allenspark Area and one on the Pawnee National Grasslands. The PNG Baker Draw Shooting area was designed in FY12 and will be constructed in 2013.

Several annual Lefthand Canyon cleanups have been instituted to remove debris and rehabilitate this heavily impacted dispersed area. There have also been shoreline cleanup projects at Lake Granby and Shadow Mountain Reservoir. Buck-and-rail fences were installed around several dispersed campsites in the Stillwater area of the Sulphur Ranger District to prevent campers and OHV riders from traveling beyond the designated dispersed campsite boundary.

Additionally in 2005, the Boulder Ranger District completed the Brainard Lake Recreation Management Plan and Environmental Assessment for Brainard Lake Recreation Projects. Implementation design began in 2006, continued into 2010 and several components were completed in 2011 and 2012.

Visitor Satisfaction	Have the Forest and Grassland made progress toward providing satisfactory recreational experiences to visitors? (Human Uses, Visitor Satisfaction - Objective # 5)

The ARP strives to provide satisfying recreation experiences to our visitors. The Mt. Evans Recreation Area has provided the public with a substantially enhanced recreation experience. The additional funding enabled by the standard amenity recreation fees via the Federal Lands Recreation Enhancement Act of 2004 (REA) has provided for: toilets cleaned to high standards and at greater frequencies; interpretive programs and Forest Service interpreters to lead them; roving patrols to provide visitors with information, comfort, safety and security; new and improved signage; a new interpretive and nature center at Mt. Goliath; and other facilities maintained to high standards.

Within the Arapaho National Recreation Area, standard amenity fees have provided increased service patrols, interpretive day events for first and fifth graders, boat safety patrols on Lake Granby and Shadow Mountain Lake, cleaned and maintained toilets and trash service in the ANRA picnic areas, and law enforcement patrol in the ANRA for enhanced visitor safety and security. The Christmas Tree special recreation permits at Clear Creek, Sulphur, and Canyon Lakes Ranger Districts provides for substantial information and educational opportunities, technical assistance, safety and security, and overall interaction and good will with the public.

More and better interpretive signs and information has increased visitor satisfaction. New signs on Guanella Pass Scenic Byway, a new trailhead, restroom/warming hut, parking and interpretive plaza at Berthoud Pass, and three interpretive signs at the Lake Granby Overlook of the Colorado River Headwaters Scenic Byway were constructed within the past few years. At the Clear Creek Ranger District's Visitor center a new interpretive kiosk was recently built. New wildlife mounts and natural wood furniture for the Sulphur Ranger District visitor center have enhanced the visitor's experience. The Boulder Ranger District Visitor Center has also seen improvement with additional available maps, furniture and information racks. A substantial visitor center was designed and constructed for the Forest Supervisor's Office and the Canyon Lakes Ranger District's new office building. Interpretive displays for recreation trip planning and outdoor safety were created as were maps and displays regarding basic location and orientation. The ARP upgraded its web pages for recreation and published a new, updated Forest Visitor Map in 2012.

The Front Range Sport Shooting Partnership was established in 2007. This Partnership with the ARP as a founding member has a mission to develop and expand a framework of cooperation among federal, state, and local partners to enhance shooting sports opportunities in a safe and environmentally sound way along the Front Range of Colorado.

Hundreds of recreation special-use permits are issued to providers who serve the public and provide recreation experiences via outfitter/guides, marinas, ski areas, boat docks, recreation events, recreation residences, and many others. Also, the Forest Campground Concession Permit provides for concession-managed developed campground (and some picnic areas) operations, maintenance; host staffing, and interpretive programs. Most commenters are very satisfied with the condition and quality of the facilities and services provided at the campgrounds by the concessionaire and the Forest Service.

Roads and trails, signs, information bulletin boards, toilets at trailheads, facilities, dispersed camping areas, day use areas, historic and prehistoric sites, paleontological sites and other areas are maintained on the ARP for enhanced public recreation experiences.

The ARP also provides random interpretive programs in the field and sessions at schools, visitor contacts at district VIS centers and in the field and interpretive signage for our kiosks and bulletin boards. In addition, the ARP has invested in upgrading and hiring visitor services personnel to increase service to the public.

Finally, the 2010 National Visitor Use Monitoring survey estimates approximately 5.4 million annual visits to the ARP, and relatively few complaints occur each year. The overall finding is that the ARP is far exceeding our 70% satisfactory recreation experience objective in the Forest Plan as shown in the following NVUM data: Developed Facilities (83%); Access (87%); Services (81%); and Security (94%).

Travel Management	Have priorities been established and implemented for managing travel to best meet future travel and access needs of Forest users? How has this been accomplished? (Human Uses, Travel Management - Objectives #6, #7, #8, #9, #10, #11)

The Forest Plan recognized the importance of managing travel and transportation planning on the ARP**.** It is the implementation of this, which has been difficult especially due to tight budgets, competing priorities, personnel downsizing, as well as the long public process to obtain informed consent among polarized users.

In 2003 the Chief of the Forest Service identified unmanaged recreation, and specifically OHV use, as one of the four major threats to sustainable forest health. As a result, on November 9, 2005 the "Travel Management: Designated Routes and Areas for Motor Vehicle Use Rule" (aka Travel Rule) was finalized in the Federal Register. This rule requires the Forest Service to designate a system of roads, trails, and areas open to motor vehicle use by season and vehicle type. The public has had, and will continue to have, full review of preliminary inventory and maps. This designation is completed via publication of a Motor Vehicle Use Map (MVUM), which will be printed annually and updated as often as necessary. After MVUM's have been printed, it is a violation of Forest Service regulations to use or possess a motor vehicle anywhere not designated on the MVUM.

Several of the ranger districts on the ARP began work on their road/trail inventory in FY07 and continued into FY08, FY09 and FY10. Their actual completion dates are as follows:

Sulphur	September 2007
Pawnee	May 2008
Canyon Lakes	September 2009
Boulder	December 31, 2010
Clear Creek	December 31, 2010

Forest Closure Order No. UFC-01-13 (Urban Front Country Occupancy & Use, approved on 6-30-13) prohibits "using a motor vehicle off of National Forest system roads except snowmobiles operating on at least six inches of snow" and "using any type of vehicle on any National Forest system road or trail except those vehicles that are allowed by signing on that road and trail." The order also lists, by Ranger District, specific roads and trails closed to motorized vehicle travel, year-round and seasonally. Districts are implementing the above closure order, as well as implementing the MVUM and planning for any needed additional closures and opportunities for motorized travel. The order is nullified for motorized travel designations when each District published its first MVUM.

TRANSPORTATION:
Travel management consists of three components: transportation planning in support of increased users and uses, implementation of projects resulting from transportation planning; on-going maintenance and monitoring of the decisions made on the transportation system.

Planning: All districts on the ARP have ongoing travel management planning projects. In some instances, it has occurred in conjunction with planning for other projects or during landscape analysis. On the Boulder and Sulphur Ranger Districts and the Pawnee National Grassland, specific travel management plans have been developed for portions of the units. Travel management is very controversial in the surrounding communities. The public involvement process is complex and time-consuming. For that reason, there has been a reluctance to include travel management planning with planning for targeted projects such as hazardous fuels reduction. The ARP has been unable to make the financial or time commitment to a regular, unified travel management program. The majority of the effort has been placed on inclusion of travel management in large project planning efforts (e.g., hazardous fuels analysis) such as on the Sulphur and Canyon Lakes Ranger Districts, however, with the completion of planning in 2005 for the Left Hand area on the Boulder Ranger District a smaller scale travel management project was accomplished.

In January of 2001, new legal requirements for travel/transportation planning for roads were adopted. The new requirements called for a scientific-based transportation planning process. The Forest Service developed a national process called *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System*. The new system provides scientific-based recommendations to land managers for management of the roaded transportation system. Decisions involving new or changes to the National Forest road system are required to be "informed" by a Roads Analysis Process (RAP). In FY 2003, the Forests and Grassland completed a RAP for all of the maintenance level 3, 4, and 5 roads on the inventory. This RAP document will serve as an umbrella document for future roads analyses at the area, watershed or project level for our remaining road system.

In 2005 the Travel Rule was issued which required the designation of roads, trails, and open areas to motor vehicle use by vehicle class and time of year. This rule provided for a national framework to complete the designation while allowing for local decisions. The ARP has completed the initial publication of the motor vehicle use maps for all its Ranger Districts.

The Travel Rule regulations (36 CFR 212.5(b)) require as part of "Subpart A – Administration of the Forest Transportation System" that the Forest Service "responsible official must identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands" and "identify the roads on lands under Forest Service jurisdiction that are no longer needed to meet forest resource management objectives and that, therefore, should be decommissioned or considered for other uses, such as for trails." The ARP followed this direction by setting up the process for analyzing the road system by developing resource-based criteria and creating models for consistent analysis across the Forests and Grassland. Beginning in FY13, two Districts, Clear Creek and Boulder will be implementing this process to develop a District travel analysis report.

Implementation: Implementation of projects occurs when transportation decisions are made in the planning stage and are funded through through the Forest road, capital investment, timber purchaser or other programs. As defined by the ARP, the implementation phase is implementation of recent travel management decisions and not the annual or routine activities necessary to maintain previous decisions or actions. Typical projects include OHV trail designations, authorized and unauthorized road decommissioning, road restrictions and closures, and implementation of road construction or

reconstruction in other projects whose objective is not directly related to travel/transportation management. These projects include road work in timber sales, roadside erosion control, moving of roads out of drainage bottoms and roadwork included as part of other capital investment projects.

Average implementation of road reconstruction has been at the base level. This is primarily due to most timber roads and fuels projects utilizing existing roads with very little need for reconstruction. The fuels program access needs changed with the varying treatment methods being utilized. Little road reconstruction is necessary for fuel treatment such as piling and burning or chipping. In general the timber program provides road reconstruction at the base level while the fuels vegetation program needs are provided by increased efforts in road maintenance activities.

The ARP has not met Forest Plan objectives for new open system road construction. National emphasis has not been for new road construction, but is toward maintaining and/or improving the existing road system. This is not necessarily a negative indication of Forest Plan implementation. It appears to be an indicator of the ARP following national directions and policies. The need for new, permanently open roads appears to be less than anticipated by the Plan. More data is needed before recommendations can be made for changes to this particular objective.

O*n-going Maintenance and Monitoring:* Ongoing maintenance includes the recurring work such as system road and trail maintenance, sign maintenance, managing seasonal gate closures, installing information boards and signs, reinforcing existing closures and obliteration of parallel roads and resource damage. Inventorying and performing road deferred maintenance surveys of all Maintenance Level 3 to 5 continues with a goal of doing these surveys on a reoccurring five year cycle. The ARP personnel doing the on-going management activities are continually monitoring, evaluating and prioritizing the work for following years. The ARP has not met the Forest Plan objectives for maintaining system roads.

Land Uses and Ownership

Boundary Mgt., Access and Land Ownership Adjustments	Has the Forest made progress toward improving boundary management, access, and land ownership adjustments to protect and enhance Forest and Grassland resources and to increase management efficiencies? Which approaches have been effective? (Land Uses & Ownership, Boundary Mgt., etc. - Objective #1, #2)

Identification of boundary lines has averaged almost 55 miles per year over the last five years. For the past 3 years the ARP has met or exceeded the Forest Plan range objectives of 50 miles/year. With the increased population and the demands for recreation, the ARP is experiencing dramatic increases in use which causes increasing problems of trespass, encroachment, and loss of access by the public. However, the boundary management program emphasis has shifted to support the hazardous fuels reduction program, and impacts caused by the mountain pine beetle epidemic. Boundary location work is now performed by a mix of service contracts, force account and through agreements with the Bureau of Land Management. The ARP program is managed by a Forest land surveyor whose accomplishments have exceeded the maximum Forest Plan objective for identifying boundary line by an average of 13 percent.

In most cases, land adjustments are multi-year projects. Progress has been made toward Forest Plan Objectives though land adjustment cases can be dropped or frequently changed because of changing land values, indecision, delays in environmental analysis (NEPA), and the changing economic climate. With

the decrease in budget for NFLM, there is no funding specifically set aside for Land Adjustments. If funds are earmarked for this program, it is to the detriment of other Lands program areas.

Easy to resolve encroachments, such as fences, are being removed in conjunction with fuels and survey projects. The larger, more complex encroachments continue to take longer to resolve and involve political environments that aren't conducive to resolution.

Case Backlog for SUPs, ROW Grants and Land Ownership Adjustments	Have the Forest and Grassland made progress toward improving customer services to reduce the number of backlogged cases for special-use permits, rights-of-way grants, and landownership adjustments? How has this been accomplished? (Land Uses & Ownership, Special Use Permits (SUPs), Right-of-way (ROW) Grants & Landownership Adjustments - Objective #2)

Although progress is made to address existing backlog, applications for special uses and access easements continue to increase every year. The wildfires of 2012 resulted in numerous applications for in-holding access and infrastructure associated with new construction to those inholdings. Additionally, the Forest processes 15-30 permits for research and filming requests also in association with the wild-land fires. Target accomplishments and continued protection of the Forest resources are a testament to the experience and expertise within the Lands Program.

In 2010-2012 the ARP recreation special use permit administrators and ARP recreation staff worked on drafting an ARP Needs Assessment for potential outfitter and guide use. A draft was completed in 2012.

Permit Review, Cost Recovery	Have the Forest and Grassland made progress toward working with potential permittees to insure that benefiting parties assume the costs of permit review and administration? How has this been accomplished? (Land Uses & Ownership, Permit Review - Goal #2)

Cost recovery was implemented nationally in FY 06 and is fully implemented. The ARP continues to collect approximately $5000 to $10,000 per year in categories 1-4 (smaller proposals) and $50,000-$80,000 in categories 5-6 (major projects). The Category 1-4 collections, however, reimburse program staff for only 30% of the true cost of NEPA analysis and processing, therefore these should not be reflected as part of anticipated budget adjustments. Categories 5 and 6 can be included in overall budget numbers, however those dollars are only applicable when the actual project is being processed, therefore the use is somewhat restricted.

Public Involvement	How and to what extent have the public and stakeholders been involved in assisting implementation, monitoring and evaluation of the Forest Plan?

In recreation, stakeholders have primarily been involved in the implementation of trail maintenance, noxious weed removal, and information and education work across the Forest. Many volunteer groups contact visitors, patrol wildernesses and summer/winter trails, restore watersheds, improve stream habitat, and record specific data for monitoring purposes.

All the Ranger Districts have environmental education programs including presentations to schools. In 2008 the Recreation Program manager worked with Fort Collins Natural Areas Program and Poudre

School District representatives to apply for and secure a "More Kids in the Woods" grant to help improve the Poudre School District's 6th Grade Eco-Week program, which continued through FY2010. Information, education and interpretation programs continued in 2011- 2012 in key campgrounds, at Mount Evans, at the Monarch Lake Environmental Education Day Program, and at all visitor information services at each Ranger District.

Before any ground-disturbing project can be implemented, NEPA requires analysis of effects on our natural/human environment, and it also requires full involvement by the public during the analysis and decision process. The ARP has over 100 proposed projects that are in the analysis/decision process at any one time. The public is given all opportunities to get involved. The ARP's Schedule of Proposed Actions (SOPA) lists these proposed projects and provides a contact person for the project. Our publics get involved at that point or later as public notices, newspaper articles, or a direct mailing let them know about the project. This public involvement can include field trips, public meetings, comment periods, and various other methods. After the project has been approved and implemented, many of the Ranger Districts hold public field trips to review implementation of the project.

Implementing new or updated allotment management plans (AMPs) in order to meet or continue to move toward desired vegetative conditions, including plant composition and vegetation structure guidelines, are important components of the rangeland management program.

A national MOU exists between the Public Lands Council (PLC) and the Forest Service (an identical one with the BLM) for cooperative rangeland monitoring with grazing permittees. The number of grazing permittees who are assisting in collection of allotment monitoring data is increasing each year. Cooperative Extension Service personnel from Colorado State University as well as Agricultural Research Service (ARS) personnel from the Central Plains Experimental Range are actively involved in conducting training and working with producers.

The Colorado Cattlemen's Association has been instrumental in urging their members to be involved in allotment monitoring efforts and in training and coordination efforts with Forest Service permittees. CCA completed a signed MOU with the Forest Service in 2011, and they have begun conducting a number of training sessions around the state on cooperative monitoring, including one in Greeley last summer. In addition, the Crow Valley Livestock Cooperative (CVLC) and the Pawnee Cooperative Grazing Association (PCGA) on the Grassland have been heavily involved through their Boards of Directors in training their members and collecting monitoring data on the allotments they jointly administer with the Forest Service.

Emerging Issues	Have changes in agency management activities resulted in unforeseen issues that the ARNF and PNG need to address? How were needed changes determined and what recommendations or solutions did the public [or ARP personnel] offer?

RECREATION

Ongoing or Emerging Issues

- Illegal UTV (vehicles exceeding 50") use increasing. These UTVs are using trails which are limited to vehicles 50" or less. This is causing resource damage.

- Renewed emphasis in inventory and data management (INFRA database) of Developed Recreation Sites, Trails, as well as real property inventories for all Recreation Facility assets has created a higher than expected workload and cost to the agency, both in terms of dollars and opportunity cost of not doing other necessary work. However the benefit is timely, accurate data is needed for better managing all forest recreation facilities and stewardship assets. Condition surveys and real property assessments continued through FY11 and FY12 ending in 98% completion for that 5-year cycle.
- Prior to December 8, 2004, the Recreation Fee Demo (RFD) program brought some positive effects to the public but it also created some negative issues. Since the Federal Lands Recreation Enhancement Act of 2004 (REA), a small but very vocal segment of the public has used the REA fee authority as a poster child for protesting fees, government management authority over public lands, taxes, and general fairness issues. Since 2008 and continuing through 2012, the Forest Service has been involved in an ongoing lawsuit over Forest Service implementation of REA at Mt. Evans.
- The Forest Service commitments made through Memorandum of Understanding (MOU) with groups like the Continental Divide Trail Alliance and the Colorado Fourteeners Initiative can establish partner expectations for funding, planning, and project implementation that the ARP may or may not be capable of upholding. Certain negotiation aspects are outside local control and we are faced with timing issues, funding issues and issues of other higher priority work which often conflict with partner expectations. Even at local Ranger Districts the issue of outside partner or user group expectations of Forest Service ability to respond to their needs and of other higher priority work is often misunderstood or not realized. Regular review of Forest and District work priorities and capability should help to focus workload and deflect unrealistic expectations by the public even though the ARP's success in attracting and managing volunteers has been a successful component of the ARP Recreation Program since the Forest Plan implementation began at the end of 1997 through 2012.
- Costs of providing safe drinking water that meets State standards and regulations are rising sharply. Microscopic Particulate Analysis (MPA) testing for all water systems is now on a 3- year cycle and costs between $1,500-$2,000 for each test. Some campgrounds and picnic areas do not collect enough revenue to offset these costs and must be covered by appropriated funding sources. Some campgrounds do not have the size or season length to justify the cost of continuing to provide safe drinking water at those sites. Taking the next step of decommissioning some drinking water systems at some low use sites is an important consideration for future management of these recreation facilities. In several cases, it is far cheaper and safer to identify a site as a dry, pack-in personal water needs site than to continue to bear the costs of routing water testing, pump and waterline replacements, chlorination, and run the risk of bad water potentially being served to the public. Cost benefit assessments should be an ongoing process for some questionable sites.
- Carrying capacity determinations for specified recreation areas that are undergoing planning processes are needed to help plan for existing and future human use, especially where there is demand for outfitter and guide services. On September 17, 2008, final directives were published for Outfitting and Guiding on National Forest System Lands. September 17, 2009 was the date that holders of temporary permits for Outfitter/Guide (O/G) services could request reclassification to transitional priority use. Assessment of need for certain O/G services, delineation of geographic areas into compartments, review of existing permitted use by compartment and assessment of carrying capacity in key compartment areas is work that continued throughout 2012.
- Recreation use in the urban front country is increasing, as are the corresponding impacts and conflicts between users. Urban front country areas need to be assessed for their capacity to provide specified recreational experiences in certain areas and not to provide certain recreation experiences in others. This assessment should then lead to management changes on the ground in

the future. This process was initiated in 2007 with the establishment of a Forest Niche statement and description as part of the Rec. Facility Assessment process. This process has been used in some recreation planning efforts but not consistently. This information needs to be updated and used for all future recreation planning work.

- Epidemic conditions of the mountain pine beetle (MPB) have created very dire conditions in many of our developed site campgrounds and picnic areas. In 2008, the ARP Recreation Program Manager was part of a Region 2 Team to assess impacts of the MPB on developed recreation sites, dispersed and wilderness areas, trails, and special use sites like Ski Areas and Recreation Residences on the Arapaho-Roosevelt National Forests, White River National Forest, and Pike-San Isabel National Forests. The team made recommendations for consistent approach to hazard tree definition, identification and process for mitigation of such widespread impacts in these specified recreation areas. In FY09 the ARP estimated miles of roads and trails and acres of recreation developed sites affected by hazard trees killed by the Mountain Pine Beetle, and the costs associated with mitigating those hazards. Those estimates were used to fund and implement bark beetle mitigation of hazard trees in developed recreation sites and along key roads and trails throughout the FY10 to FY12 period.

Recommendations

- The "300 foot rule" stated on the Forest Map has been incorporated into the 2005 Travel Rule, however, the ARP needs to do site-specific decisions in areas of concentrated dispersed use.
- Some travel management planning and decision-making occurred as the ARP Districts created their Motorized Vehicle Use Maps.
- Additional Wilderness management elements need to be attained as well as additional Wilderness areas managed to standard.
- Special-use permits need to be administered to minimum standards, and more need to be administered fully.
- INFRA databases for Wilderness, Developed Recreation and Trails should be fully populated and operating at a functional level. INFRA for General Forest Areas will most likely be in some phase of implementation.
- More "field presence" is needed to educate the public and enforce regulations. The Forest Service "field presence" personnel should have training to be certified as Forest Protection Officers.
- The James Peak Wilderness (JPW) issues and obligations need to be met. The JPW needs a management plan to focus efforts and establish specific standards and guidelines.
- Consider converting some small campgrounds and day-use areas to dry-sites (no developed water system) as circumstances allow and follow through on ARP Recreation Facility Analysis recommendations for decommissioning of certain developed recreation sites.
- Plan to address carrying capacity as part of management planning and/or environmental analysis for recreation areas undergoing some kind of existing planning process or potential planning based on need or demand.
- Assess ARP urban front country areas for their capacity to provide specified recreational experiences and determine what experiences are better provided in other locations on the ARP or on other lands.
- Increase protection measures for existing stands of healthy trees in our developed sites and begin vegetation management planning for eventual stand vegetation replacement and in some cases, catastrophic vegetation loss replacement.

TRAVEL MANAGEMENT

Ongoing or Emerging Issues

- There is concern about meeting Forest Plan objectives due to higher planning costs and having to "re-close" previously closed roads and trails. The increasing cost of managing and supporting the hazardous fuels treatment program has diverted funding from on-the-ground transportation system improvement, maintenance and decommissioning.
- At times new travel routes are being established through "social" use and illegal travel activities. In some instances, users are constructing trails and then coming to the forest and asking that the forest add the new trails to our "system" and demanding that we maintain the trails. Many times, these requests are the first we know of the "new" facilities. Some liability issues could be associated with these new, illegal facilities.
- Upkeep of transportation system inventory information, including needed, planned and accomplished annual and deferred maintenance will require more time and effort.
- The Forest Service published the Travel Rule in November, 2005. This rule directs that motorized use will be allowed only on designated forest system roads or trails on all National Forest lands as shown on published Motor Vehicle Use Maps for each Ranger District. Keeping the Access and Travel Management (ATM) database up-to-date is an ongoing challenge and updating Road Management Objectives (RMO's) and Trail Management Objectives (TMO's) is also important but often of lesser priority because of other more impending needed workload, especially at the Ranger Districts.
- Continually updating the MVUM as conditions and travel management decisions are made will be required, but funding may not always support the effort.
- Updating INFRA database will continue to be a challenge.
- The mountain pine beetle epidemic and related lodgepole pine mortality is creating an extensive need for hazard tree removal along key roads and trails on all Ranger Districts.
- Updating National Forest System road signing to meet retro-reflectivity requirements has been challenging to meet due to limited funding.

Recommendations

- Continue to make the implementation of the Travel Rule an ARP priority.
- Continue to follow the Travel Analysis Process (TAP) for travel management recommendations.
- Continue to improve relationships with volunteer groups and aggressively seek out challenge cost share projects.
- Continue to sign roads and trails for the types of uses allowed.
- Minimize illegal use through expanded law enforcement and field presence. There is a need for aggressive law enforcement and follow up on the districts where the transportation system is being actively signed and managed and where MVUM's have been published.
- Work with the public and adjacent landowners to inform them of Arapaho and Roosevelt National Forests and Pawnee National Grassland travel regulations.
- Establish a method to more adequately plan and track accomplishments and utilization of funds allocated for "ongoing" activities.
- The Forest and Grassland should make a commitment to transportation planning and facilitate its completion. On an ARP-wide basis, prioritize the areas where the ARP will address travel management in association with landscape analysis or on broad project areas. Incorporate travel management planning and the TAP process with other area or project level assessments and analyses for best efficiency. Proceed with planning and implementation based on those priorities.

- Evaluate Human Uses Objective #6 (Forest Plan, p. 8) for applicability to present National Policy and the transportation needs of the Forest and Grassland. National policy leans more toward decommissioning unauthorized roads than converting them to authorized roads. Decisions should be based on sound TAP procedures.
- Evaluate Human Use Objective #9 (Forest Plan, p. 8) for applicability to present National Policy and the transportation needs of the Forest and Grassland. National Policy leans more toward reconstructing and maintaining our existing transportation system. Most of the areas of the Forest and Grassland in need of open road access already have that access. Decisions should be based on sound TAP procedures.
- Revise Objective output measures to match those of Road Accomplishment Report and INFRA so reportable objective accomplishments and annual accomplishments are measuring the same thing. This will also make monitoring and evaluation reporting easier.\

WILDFIRE/HAZARDOUS FUELS TREATMENT

Ongoing and Emerging Issues

- There are many management issues related to the interweaving of public land and private property. This public land/private property intermixing is commonly known as the Wildland-Urban Interface (WUI). One of the most public issues is the danger of wildfires. Since 2000, five of the largest wildfires for recorded ARP wildfire history have occurred. The sizes of these fires can be related to the severe drought at that time and the increased build-up of dead, woody material (hazardous fuels) in the forested ecosystems. The high loss of personal property is due to the increasing inroads into these forested environments by private landowners and mountain communities.
- The mountain pine beetle epidemic and related lodgepole pine mortality is creating an extensive need for hazardous fuels treatment on all mountain Ranger Districts. Forest Supervisor's hazardous fuels treatment emphasis items include 1) scale of treatments (landscape versus defensible space), 2) watershed versus site specific, and 3) transmission line and infrastructure protection.

Recommendations

- Congress has recognized this problem through increased funding and the ARP's hazardous fuels treatment program has expanded with the objective of reducing hazardous fuels; in the WUI, around domestic water supplies and watersheds, and to protect threatened and endangered wildlife/plant species. The ARP should continue all efforts to work with our neighbors (private property owners and public agencies) towards achieving reductions of hazardous fuels. Emphasis on the National Forest Plan and the Front Range Fuels Treatment Partnership should continue.
- Assess increasing amounts of hazardous fuels and emphasis items while developing plans to address fuels and vegetation management needs.

SCENERY RESOURCE

Emerging Issues

- There were no unforeseen issues which emerged as a result of project implementation or changes in agency management during FY 2012. Issues pertinent to scenery resource management were

foreseen and are related to ongoing agency management (e.g. vegetation management treatments targeting the mountain pine beetle infestation). Looking toward the next fiscal year, issues may arise as the Forest contemplates utilizing tools such as higher intensity and larger scale prescribed burning in mountain pine beetle-killed areas of the forest and as hazard tree removal projects planned for roads, trails, developed recreation sites, and power lines are implemented.

WATERSHED

Ongoing and Emerging Issues

- Meeting the needs for environmental flows in streams in the ARNF continues to be an issue. Increased interest in additional water development in response to the expanding urban and intermix populations and the potential for drought, have the potential to push this issue to the forefront. There are currently three proposals to increase storage and/or diversion capacity for existing projects under environmental review that are likely to affect the Forest; Seaman Reservoir expansion, Windy Gap Firming, and Gross Reservoir expansion.
- Off-highway vehicle and mountain bike use continue to increase. Unauthorized travel is a continuing source of watershed damage that continues to grow. Recreational use of designated roads and trails increases the controversy of travel management and can limit our ability to decommission and obliterate roads and trails for resource protection and recovery.
- The anticipated continuing increase in land area treated to reduce fuels and to treat mountain pine beetle killed trees could lead to cumulative watershed impacts. The cumulative impact could increase as treated areas are retreated in the future to maintain acceptable fuels profiles.

Recommendations

- Continue to seek innovative methods of providing for municipal and agricultural water supply while fulfilling our responsibility to provide for streamflow for ARP uses and purposes.
- Explore ways to provide for desirable OHV recreational experiences while protecting resources. Determine whether developed OHV trail systems such as the Stillwater OHV area have applicability elsewhere on the ARP.
- Focus implementation on identifying and completing sufficient watershed improvement within priority watersheds so that improvement in watershed condition can be demonstrated.

SOILS

Ongoing or Emerging Issues

- Monitoring indicated that occasionally design criteria and relevant/recommended watershed conservation practices were not applied in some activity areas. When these are discovered, actions are taken to mitigate effects and to prevent future occurences.
- Accumulation of high soil burn severity effects and noxious weed establishment is an ongoing issue on some activity areas, particularly where burn-pile density is high.
- Monitoring indicates operation of heavy equipment involving multiple passes and turns off designated skid trails has created excessive soil disturbance in some activity areas.
- Chipping and masticating activities are creating heavy fuel loadings in some activity areas with unknown long-term ecological consequences
- Progression of the Mountain Pine Beetle pandemic, accumulation of dead and/or downed fuels and associated risk of high soil burn severity impacts if/when future wildfire occur

Recommendations

- Continue to use the Soil Disturbance Classification Protocol, first applied on the ARP in 2008, for soil quality monitoring
- Continue to work with Recreation Specialists, Marking Crews, Silviculturists, Engineers, and CORs on soil/water resource issues and solutions
- Continue to partner with Rocky Mountain Research Station (RMRS) and local universities to develop and implement research projects relevant to ongoing and emerging issues
- Continue to implement watershed improvement projects to improve the condition of soil and water resources in heavily impacted areas

AIR

Ongoing or Emerging Issues

- High concentrations of ozone that continue to occur frequently in the summer months could potentially be affecting human well-being and ecosystems on the Arapaho and Roosevelt National Forests and Pawnee National Grassland. Currently, parts of the Front Range Air-shed exceed public health standards for ozone.
- Nitrogen deposition due to off-forest, anthropogenic emissions might be detrimentally affecting higher elevation ecosystems.
- Increased smoke emissions from prescribed and wildfire could affect sensitive receptors and Class 1 areas on and off the ARP.

Recommendations

- Continue lake, snow and ozone sampling programs
- Continue to work with the Forest Service ARP, Regional, Washington Office and RMRS Personnel to identify and quantify air quality issues and impacts on the ARP (particularly Wilderness Areas, Class I Airsheds, and human health)
- Continue to work with other agencies such as Rocky Mountain National Park and Agricultural Research Service to identify air quality issues and impacts on the ARP
- Continue to implement prescribed fire in compliance with permits issued by the State of Colorado
- Continue to participate in the Prevention of Significant Deterioration (PSD) Program to lower risk of air quality impacts from off forest sources within Front Range, Granby and Medicine Bow Air-sheds
- Update the ARP Air Quality Monitoring Plan to achieve objectives of "Air Element 3" in the 10 Year Wilderness Challenge

WILDLIFE/FISHERIES/RARE PLANTS/INVASIVE SPECIES

Mountain Pine Beetle Epidemic Ongoing Issues On Wildlife And Habitats.

- Loss of mature habitat/old growth will affect wildlife that depend on this type of habitat
- Increased fire danger/wind damage could change wildlife habitats; updating vegetation layers is critical to tracking changes
- Changes in snag densities and early successional stage habitats affect different wildlife and their habitats. Some wildlife species will be benefited while others will be negatively affected.

- The threat of White Nose Syndrome in bats and chytroid fungus in amphibians should motivate additional survey and habitat protection for these species.

Old Growth Emerging Issues

- Given the on-going loss of old growth lodgepole pine and potentially low elevation old growth ponderosa pine and Douglas fir, due to MPB, there may be a need to re-evaluate all of our existing and future old growth designations and management.

Aquatic Nuisance Species Emerging Issue

- Although quagga mussel larvae were detected in Lake Granby on the Sulphur Ranger District, rigorous testing has not detected a single adult, juvenile, or larva in the past five years. These are non-native mussels that have spread throughout the country. These organisms have caused large-scale ecological and economic problems in lakes and rivers in the Midwest, the Southwest, and even in some portions of Colorado. Due to the level of recreational boating on this lake system and its waters run into both the South Platte and Colorado Rivers, risks of introducing quagga mussels remains quite high. The need to continue boat inspections at the lakes in the Arapaho National Recreation Area will be re-evaluated in 2013

Aquatic Nuisance Species Recommendations

- We are committed to working cooperatively with the Colorado Division of Wildlife and other partners to limit the potential for spread of these aquatic nuisance species. A new challenge cost-share agreement was made in 2010 to assist CDOW in managing boat inspection and cleaning stations. Work continued on limiting the spread of these nuisance species in 2011 and 2012.

Greenback Cutthroat Trout Genetics Emerging Issue

- Recent genetic studies published in 2007 and 2012 identified major issues with the scientific understanding of cutthroat trout genetics on the east slope and west slope of Colorado. These published findings strongly indicate that there are no currently existing populations of the aboriginal cutthroat trout on the east slope of the ARNF. While cutthroat populations still occur on the eastern slope of the ARNF, the genetic origins of these fish are from various areas of the Colorado River Basin.

Removal of Large Wood from Forest Streams and Rivers for Recreation Purposes Issue

(e.g., passage for rafting and kayaking and access for vehicles on roads located next to streams/rivers)

- Impacts productivity of streams for both vertebrate and invertebrate species

Noxious Weeds Ongoing or Emerging Issues

- Funding has been flat or has decreased in recent years for the Forest-wide noxious weed program, and outside funding sources are being increasingly relied upon. As a result, desired program targets are compromised. Additionally, inventory and treatment monitoring program components are minimal. Capacity for desired program accomplishments is expected to remain at decreased levels commensurate with reduced budget. Although heavily constrained in recent years, the Forest was able to exceed its annual targets in weed treatment by use of outside funds and collaboration by counties.

Fen Ongoing or Emerging Issues

- Fens, which are uncommon specialized wetland ecosystems often harboring rare plants, are being adversely impacted by unauthorized off-road vehicle use, or “mud bogging.” Monitoring shows that one fen per year on the ARNF has been severely impacted by such use since 2003.

Restoration of one fen has been attempted, but is difficult to achieve, and damage can take hundreds of years to heal. Currently, there is a lack of adequate protection or law enforcement measures to remaining sites across the ARNF. Resource damage to fens are expected to increase.

Use of Native Plant Materials Issue

- The ARP is committed to using all native plant materials in revegetation and restoration efforts. Recently, however, native seed availability on the open market is becoming increasingly contaminated with undesirable invasive species such as cheatgrass. The ARP is responding by having contractors and collaborators grow and harvest weed-free seed for Forest use. The Native Plan Materials program has experienced severe budget reduction the last three years, making it more difficult to secure weed-free seed. Seed in the market place is predicted to become more contaminated with non-native weedy species, and decreased plant materials funding will make it more difficult to grow weed-free seed for ARP use.

RANGELAND MANAGEMENT

Ongoing or Emerging Issues

- Dealing with the severe and extended drought of the last decade in Colorado, as well as much of the West, continues to occupy a substantial portion of available time for rangeland managers; this includes planning for coming out of drought periods to allow the land, water, and vegetation resources to recover. Drought strategies have been developed and continue to be implemented and monitored. Producers have been responsive in implementing voluntary reductions and restrictions to be flexible with annual changes in climatic patterns, the forage responses that result, and the need to properly manage rangelands affected by constantly changing conditions.
- The allotment planning schedule has been completed for all allotments on the Forest/Grassland within the established 1996-2010 timeframe. AMPs are prepared or revised as needed in order to implement the allotment planning decisions and to continue to meet or move toward desired vegetative conditions. Allotments are now beginning a ten-year schedule of determining if the NEPA for each of them remains current and sufficient.
- There will be extensive changes to rangeland vegetation, livestock grazing patterns, permittee management and practices, and allotments and allotment infrastructure as a result of the bark beetle infestations and resultant tree mortality and deadfall (this is specific to lodgepole pine stands at this point in time, but ponderosa pine and limber pine stands are now being attacked as well) on the Forest.

Recommendations

- The situations will take many years to resolve. Flexibility, patience, and common sense will be required from all employees, IDT specialists, and Line Officers (also permittees and other interested parties).
- Seek out any and all avenues for communication, cooperation, and funding.
- Inform permittees that they need to ask – and receive – permission in advance for such issues as felling trees to maintain access routes or improvements.
- Issue free-use permits to ranchers – for firewood, POL, maybe even house logs.
- Allow the use of native materials whenever possible in fence reconstruction.
- There may be a need to revisit the national policy on not cooperating in the reconstruction of fences located on proclaimed national forest boundaries.

- There may be a need to develop a modified policy on permittee non-use.

LAW ENFORCEMENT/FIELD PRESENCE

Ongoing or Emerging Issues

- Funding allows one law enforcement officer for every 700,000 acres. On average each officer covers 850 incidents per year. Many more incidents are occurring that are going unrecorded and are not prosecuted due to lack of adequate coverage.
- In the past when out in the field, Forest Service personnel would greatly supplement the law enforcement staff by monitoring regulations, talking to the public, and reporting incidents. Due to a reduction in workforce, office requirements, and a lack of Forest Protection Officer training, this important monitoring is occurring at much reduced levels. For example there is limited ability to enforce travel management direction across the ARP due to the lack of field presence (seasonal and permanent employees).
- In an era of tight budgets and personnel downsizing, there is an increased dependence on volunteers to meet program needs. While these people do an excellent job, they lack the authority to enforce regulations.

Recommendations

- Minimize illegal use through expanded law enforcement and field presence. There is a need for follow-up on the districts where the transportation system is being actively signed. The "closed unless designated open: regulation should be actively enforced.
- When out in the field Forest Service personnel need to reestablish their law enforcement responsibilities attitude such as talking to the public and recording incidents. Currently the fire organization has the person-power and can be an excellent resource for field presence by enforcing forest regulations as well as fire regulations. Taking Forest Protection Officer training and carrying an incident book in their gear can accomplish this.
- There needs to be adequate funding and personnel to accomplish the lands related part of conflict free boundaries with regards to trespass, encroachment, small tracts, rights-of-way, and land exchange.

LANDS

Ongoing or Emerging Issues

- Funding issues and scheduling of specialists' time continue to be a factor in meeting Forest Plan objectives for the Lands Program.
- Cost recovery is the assessment and collection of administrative fees from applicants and holders to pay for administrative costs incurred by the Forest Service in processing an application. The fees collected are retained at the Forest level. The regulations are in place and the ARP did continue to implement cost recovery in FY 2012.
- With the increased population, the demands for recreation and quality of life, the Forests and Grassland are experiencing increasing problems of trespass, encroachment, and loss of access by the public. Increased requests for access to private land and use of NFS land are also associated with the demands.

- Boundary line surveying for fuels reduction projects has discovered encroachments on National Forest System (NFS) lands, which adds to the caseload in the Lands Program. A subdivision on the Canyon Lakes Ranger District was surveyed in 2004 revealing 12 lot encroachments. The ARP is working with the landowners towards a resolution.

Recommendations

- Surveying and location of boundary lines is only a part of the solution, there needs to be adequate funding and personnel to accomplish the lands related part of conflict free boundaries with regards to trespass, encroachment, small tracts, rights-of-way and land exchange.
- Emphasize processing Alaska National Interest Lands Conservation (ANILCA) access cases to avoid litigation.
- Discrepancies between Forest Plan objectives and outputs in S-Tables need to be resolved.
- Review the proposed outputs in Forest Plan objectives to ensure that the proposed outputs recognize the complexity of land ownership on the Front Range, particularly on Boulder, Canyon Lakes, and Clear Creek Ranger Districts.
- Continue to emphasize elimination of the special use and Small Tracts Act (STA) backlogs. The Forest did not meet the elimination of backlog by 2007 as stated in Table 1.7 (*Forest Plan*, p. 9).
- Gain Forest Supervisor approval to return those STA applications that do not meet the intent of the law.
- Use the 36 CFR 251 regulations and cost recovery to eliminate inappropriate proposals.
- Use the Lands Program Priorities to continue to establish a program of work for the district and supervisor offices.

MINERALS

Ongoing or Emerging Issues

- Energy continues to be a National priority. Seismic testing for oil and gas has been ongoing for the last few years and it is expected that there will be a greater expansion of oil and gas leasing nominations and applications for permit to drill on the Pawnee National Grasslands.
- The ARP accomplished its goal to certify two mineral administrators.
- Seismic testing for oil and gas has been ongoing for the last few years and it is expected that there will be a great expansion of oil and gas drilling on the Pawnee Natinal Grasslands.

Recommendations

- A Forest Plan amendment may be needed to address the greater expansion of oil and gas leasing expected on the Grassland.

HERITAGE RESOURCES

Ongoing or Emerging Issues:

- The requirements for post implementation report writing, monitoring and samples surveys outside the area of potential effect (burn units, timber harvest units, and hazardous tree removal units) are

all new requirements that the Forest needs to complete in order to meet the stipulations in the Programmatic Agreement.

- Safety of employees and contractors in dead and dying tree stands, has required the modification of the "Spruce Bark Beetle and Mountain Pine Beetle Management, Hazardous Fuel Reduction and Hazard Tree Reduction" Programmatic Agreement (PA). The modifications to the PA will require additional work (i.e. project budgets, project hazard analyses) prior to field inventories. The PA will allow the Forest to complete heritage projects in lieu of survey in areas determined to be too hazardous for field inventories.
- The rapidly expanding oil and gas exploration due to the discovery of the Niobrara Shale deposits and new hydraulic fracturing extraction technology with their requests for authorizations on the Pawnee National Grassland is increasing rapidly. These requests for authorizations to explore for and extract leasable minerals often have project boundaries that extend off of National Forest System Lands. Direct, indirect and cumulative effects to cultural resources can be expected from the issuance of these authorizations. The Forest is working with the CSHPO and the Pike and San Isabelle National Forests to negotiate a programmatic agreement to streamline Section 106 of the NHPA compliance for these projects.

Recommendations

- Compliance work is currently being accomplished on most projects in a timely and legal fashion. The heritage staff is fully integrated into the NEPA process on large projects, and on smaller projects should be involved early in the planning stages.
- Continue to seek out new and effective ways (e. g., Challenge Cost Share Agreements, university partnerships, volunteers, grants) to fund heritage resource program activities in an era of flat and declining budgets.
- Provide adequate project funding to do full implementation monitoring.
- Continue to enter data into the GIS Heritage Layers and INFRA Heritage Database.

INFRASTRUCTURE

Ongoing or Emerging Issues

- Safety along travelways due to the mountain pine beetle epidemic will continue to intensify along all National Forest System Roads (NFSR) given the increasing mortality. The most impacted Districts in 2012 were the Sulphur Ranger District and the Canyon Lakes Ranger District.
- Road maintenance funding continues to be flat. The limited funding in 2012 was directed to road support for the bark beetle mitigations and the Long Term Stewardship contract. Regular maintenance activities for non-bark beetle / hazardous fuels will continue to be funded at minimal levels which will continue to add to the deferred maintenance needs for NFSR.
- Emphasis on watershed analysis and the impacts associated with travelways will lead to an increase in need for more road decommissioning. The Forest has been decommissioning authorized and unauthorized routes as funding allows.

Recommendations

- The Forest has developed priority lists for the most critical National Forest System Routes based on regional established criteria in late 2010. The ranking criteria include, but not limited to, such factors as tree mortality, maintenance level, and recreational use access. This road priority list will

serve as a basis for current and future planning for the hazard tree removal along NFSR. The Forest will continue to update the road priority list as updated information becomes available.

- Continue the 2005 Travel Rule-Subpart A analysis on Districts using the criteria developed by the ARP.
- Continue hazard tree signage along those NFSR routes during hazard tree removal treatments to protect the public.
- Continue to prioritize road funding in support of hazard tree removal, bark beetle mitigation, and Long Term Stewardship contract.
- Decommissioning of authorized routes and unauthorized routes should continue with a desired increase as planning is completed and funding is available.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Ongoing or Emerging Issues

- Occasionally, mitigation measures and/or design criteria agreed to and documented in NEPA decisions are not always carried through to contracts and implementation. When these are discovered, actions are taken to mitigate the effects and to avoid future occurrences.

Recommendations

- Continue communication with IDT members, marking crew, and contract administrator. Utilize a cross-walk system to insure all mitigation measures and/or design criteria are included during implementation.
- Perform field reviews during and after implementation

LIST OF PREPARERS

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LIST OF ACRONYMS

ADA: Americans with Disabilities Act
ANILCA: Alaska National Interest Lands Conservation
ANRA: Arapaho National Recreation Area
ARNF: Arapaho and Roosevelt National Forests
ARP: Arapaho and Roosevelt National Forests and Pawnee National Grassland
ATV: All terrain vehicle
BFES: Budget Formulation and Execution System
BLM: Bureau of Land Management
BRD: Boulder Ranger District
CCRD: Clear Creek Ranger District
CDOT: Colorado Department of Transportation
CDOW: Colorado Division of Wildlife
CFR: Code of Federal Regulations
CLG: Certified Local Government
CLRD: Canyon Lakes Ranger District
CNHP: Colorado Natural Heritage Program
CO: Colorado
DMS: Days Managed to Standard
EA: Environmental Assessment
EIS: Environmental Impact Statement
FP: Forest Plan
FPO: Forest Protection Officer
GFA: General Forest Area
GIS: Geographic Information System
IDT: Interdisciplinary Team
KV: Knutson-Vandenberg
MAR: Management Attainment Report
MIS: Management Indicator Species
MOU: Memorandum of Understanding
NEPA: National Environmental Policy Act
NFMA: National Forest Management Act
NFP: National Fire Plan
NGO: Non-Governmental Organization
NRIS: National Resource Information System
OHV: Off-highway Vehicle
PNG: Pawnee National Grassland
RAP: Roads Analysis Process
RFD: Recreation Fee Demo
RMBO: Rocky Mountain Bird Observatory
SASEM: Simple Approach to Smoke Estimation Model
SIA: Special Interest Area
STA: Small Tracts Act
TES: Threatened, Endangered, Sensitive Wildlife or Plant Species
VIS: Visitor Information Services