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Forest Service

Mark Twain
National Forest

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Fiscal Year 2010

Monitoring & Evaluation Report



Mark Twain
National Forest

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Mark Twain National Forest, USDA Forest Service

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APPROVAL AND DECLARATION OF INTENT

I have reviewed the FY2010 Monitoring and Evaluation Report for the Mark Twain National Forest that was prepared by an interdisciplinary team during the fall of 2011. The Monitoring and Evaluation Report meets the intent of both the Forest Plan (Chapter IV) as well as the regulations contained in 36 CFR 219.

This report is approved:

David C. Whittekiend

5/16/12

David C. Whittekiend
Forest Supervisor

Date

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Summary of Findings and Recommendations

<i>Findings</i>	<i>Recommendations</i>
Goal 1 – Promote Ecosystem Health and Sustainability	
<i>Goal 1.1 – Terrestrial Natural Communities</i>	
<ul style="list-style-type: none"> Restoration activities are not keeping pace with Forest Plan objectives (page 11) 	<ul style="list-style-type: none"> Adjust NEPA planning schedule to place ecosystems at risk at a higher priority Continue to plan landscape-scale prescribed burns in moderate to high ranked REA areas Increase burn intensity effects in lieu of limited thinning Find effective ways to address non-commercial (small roundwood) treatments
<i>Goal 1.2 – Non-Native Invasive Species</i>	
<ul style="list-style-type: none"> More than twice as many feral hogs were trapped and removed than in the previous year (page 13) The Forest has met the goal for control (treatment) of NNIS; it is not known if the overall acres infested with NNIS have been reduced (page 14) 	<ul style="list-style-type: none"> Continue to work with USDA-APHIS to trap and exterminate hogs. Develop and implement process for evaluating and monitoring and the effectiveness of NNIS treatments.
<i>Goal 1.3 – Soils, Watersheds, and Water Quality</i>	
<ul style="list-style-type: none"> Forest plan standards and guidelines for soil and water protection appear to be effective, although isolated cases of detrimental soil disturbance have been documented (page 15) 	<ul style="list-style-type: none"> Forest Soil Scientist continue to assist District staff during project planning and implementation to achieve soil productivity objectives.
<i>Goal 1.4 – Wildlife and Aquatic Habitat</i>	
<ul style="list-style-type: none"> Prescribed burning was accomplished on 1,940 acres of open woodland habitat and 662 acres of glade/open woodland complex. Thinnings are also necessary to move the area towards the desired condition. (page 18) No conversion from cool season grasses to native grasses was reported in 2010. 2,300 acres need to be converted to meet Forest Plan objectives (page 18) Permanent old growth was designated on 588 acres, bringing the total acres designated as permanent old growth in MA 2.1 and 6.2 to 11,959, less than 15% of the minimum Forest Plan objective (page 18) 	<ul style="list-style-type: none"> Focus prescribed burns in areas which have or will be thinned to the desired basal area to meet desired conditions. Increase treatments to reduce basal area in open woodland habitat Increase efforts to convert cool season pastures to native grasses. Identify obstacles to old growth designation and increase efforts to designate permanent old growth.

<i>Findings</i>	<i>Recommendations</i>
Goal 2 – Provide a Variety of Uses, Values, Products, and Services	
<i>Goal 2.1 – Public Values</i>	
<ul style="list-style-type: none"> • While the amount of roundwood sold increased from previous years, the ratio of sawtimber to roundwood sold remains out of balance (page 19) • The Forest has made incremental changes to broaden the spectrum of recreation opportunities offered, although we cannot offer as many amenities as some visitors would like (page 22) • The backlog of expired special use permits has been reduced to 94 from 194 in 2007 (page 23) • The special use program is not administered consistently across the Forest (page 23) 	<ul style="list-style-type: none"> • Explore options for increasing use and demand for small roundwood. • Continue actively seeking opportunities to partner with others to meet the needs and desires of our visitors. • Continue to reduce the permit backlog and administer more permits to standard • Develop a strategy to ensure that permits across the Forest are issued in a timely manner and administered to standard
<i>Goal 2.2 – Prescribed Fire, Fuels, and Wildland Fire Management</i>	
<ul style="list-style-type: none"> • The percentage of prescribed burns conducted in Management Areas 1.1 and 1.2 has increased from 67% in FY2007 to 92% in FY2010 as a result of the Forest’s efforts to enhance ecosystem restoration activities (page 26) • A review of various burn plans shows that most of our objectives are boiler plate statements from existing and resource related projects, which makes it difficult to adequately evaluate the effectiveness of our prescribe burns in reaching Forest Plan desired conditions. (page 27) • The Forest conducted 5% of the total prescribed burns in the fall, and none in the growing season, far short of the Forest Plan objective of 40% during the fall and 20% during the growing season (page 28) 	<ul style="list-style-type: none"> • Continue to emphasize prescribed burning in Management Prescription Areas 1.1 and 1.2. • Develop more quantitative and qualitative site-specific objectives and increase pre/post monitoring of site conditions, thereby producing better analytical data for future project planning. • Identify and address obstacles to conducting fall and growing season burns.
<i>Goal 2.3 – Transportation System</i>	
<ul style="list-style-type: none"> • ATV trail monitoring has been minimal since the Forest Plan was revised, and most of the informal information that has been collected has not been shared beyond the district level. (page 30) • Despite public education and law enforcement efforts, illegal ATV use still occurs and adversely impacts resources. (page 33) 	<ul style="list-style-type: none"> • Appoint interdisciplinary team to evaluate and summarize ATV trail conditions and monitoring for last 5 years under the revised Forest Plan • Organize, label, file, and update regularly all District level monitoring information; share with the Forest resources staff. • Explore ways to more effectively curtail illegal ATV use.

<i>Findings</i>	<i>Recommendations</i>
<i>Goal 2.4 – Timber Management</i>	
<ul style="list-style-type: none"> • Adequate natural regeneration has not been a problem on the Mark Twain with appropriate site preparation. (page 33) • Large areas of the forest remain at moderate to severe risk of oak decline, but effective treatments are slowed by NEPA requirements (page 33) • The only major insect or disease problem identified is oak decline. Management activities for oak decline are compatible with objectives for restoring or maintaining healthy forest conditions. (page 34) 	<ul style="list-style-type: none"> • Continue to certify successful natural regeneration on completion of successful third-year stocking survey. Continue first and third-year plantation survival surveys in planted areas. • Develop programmatic EAs on a District, Zone or Forest-wide basis to allow timely and effective response to oak decline • Emphasize restoration of natural communities in order to improve forest health.
<i>Goal 2.5 – Geology and Minerals Management</i>	
<ul style="list-style-type: none"> • Monitoring confirmed that Forest Plan S&Gs and site-specific stipulations had been followed and were effective in preventing resource damage (page 34) 	<ul style="list-style-type: none"> • Continue working with BLM and Doe Run to ensure that drill sites do not cause resource concerns or conflicts
<i>Goal 2.8 – Recreation Opportunities</i>	
<ul style="list-style-type: none"> • While most Forest recreation facilities are maintained to meet critical standards, deferred maintenance needs are significant. (page 36) • Survey results show that Wilderness visitors are not satisfied with wilderness facilities, access and services, indicating that many are seeking an experience that is not compatible with designated Wilderness (page 36) 	<ul style="list-style-type: none"> • Continue efforts to reduce maintenance needs by reducing facilities and utilizing partnerships and unique funding opportunities. • Improve information sources so that visitors have better information about the settings and experiences they will encounter
<i>Goal 2.11 – Wilderness Opportunities</i>	
<ul style="list-style-type: none"> • The Forest has made improvements in meeting the management elements in FY2010, with four of the seven Wildernesses (Bell Mountain, Hercules-Glade, Irish and Devils Backbone) meeting the minimum stewardship goals, compared to just one in FY2009 (page 38) 	<ul style="list-style-type: none"> • Include specific plans for annual monitoring of Wilderness management and specific elements in the work planning process • Target improvements in specific elements, develop a strategy to make those improvements, and monitor and report the results.

Fiscal Year 2010 Annual Monitoring & Evaluation Report

Introduction

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

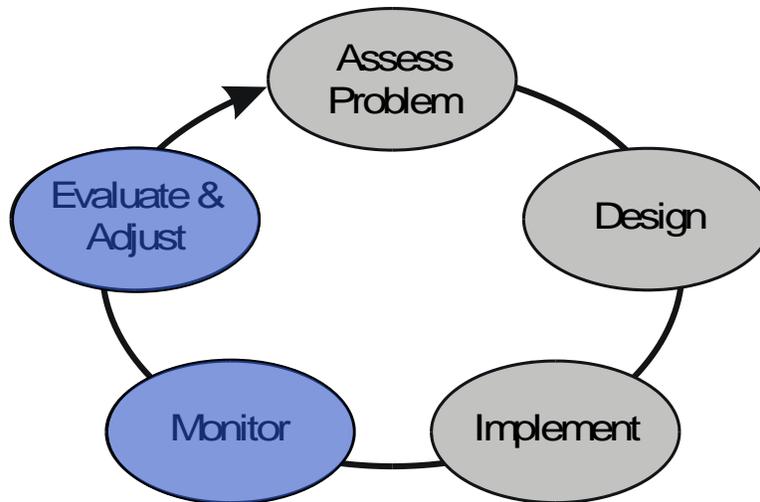
Monitoring and evaluation are learning tools that form the backbone of adaptive management. With these tools, information is collected and compiled to serve as reference points for the future; new scientific understanding and technology, changes in law, policy and resource conditions, growing concerns,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

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

Monitoring and Evaluation Requirements

Minimum monitoring and evaluation requirements have been established through the National Forest Management Act (NFMA) at 36 CFR 219. Some requirements provide guidance for the development of a monitoring program, while others include specific compliance requirements.

Monitoring and evaluation are separate, sequential activities required by NFMA regulations. Monitoring involves collecting data by observation or measurement. Evaluation involves analyzing and interpreting monitoring data. The information gained from monitoring and evaluation is used to determine how well the desired conditions, goals, objectives, and outcomes of the Forest Plan have been met. Monitoring and evaluation keeps the Forest Plan up-to-date and responsive to changing conditions and issues. This process provides the feedback mechanism for adaptive management (see figure below). The results are used to identify when changes are needed to the Forest Plan or the way it is implemented.



Previous Monitoring Efforts

Under the 1986 Forest Plan, monitoring activities were conducted and Annual Monitoring and Evaluation Reports (Annual M&E Reports) were compiled. These reports were used to inform the Analysis of the Management Situation (AMS), which was developed in preparation for the Forest Plan revision. The AMS described the current condition of the Forest and evaluated inventory and monitoring information to identify necessary changes in management direction. The AMS, in essence, closed the book on monitoring under the 1986 Forest Plan.

This is the fifth Annual M&E Report compiled under the 2005 Mark Twain National Forest Plan. Regional Forester, Randy Moore, signed the plan on September 21, 2005, and implementation of the Plan began on January 3, 2006. The Monitoring Program is described in Chapter IV of the Forest Plan.

Monitoring Program

Forest Plan

Chapter 4 (Monitoring and Evaluation) of the Forest Plan is strategic in nature and provides programmatic direction for monitoring and evaluating Forest Plan implementation. The Forest Plan addresses several types of monitoring. These requirements fall into four broad categories:

- Category 1: Required monitoring items (NFMA, and 1982 36 CFR 219 regulations, as permitted by 36 CFR 219.14(e) and (f) of the 2005 Planning rule.)
- Category 2: Attainment of goals and objectives
- Category 3: Implementation of standards and guidelines and
- Category 4: Effects of prescriptions, management practices, and off-road vehicles

Required Category 1 monitoring items are mandatory components of every forest plan, whereas Category (2) through (4) monitoring items are more flexible and tailored to address issues raised through public scoping and interdisciplinary team review. A more complete description of Category 1 through 4 monitoring items can be found in Chapter 4 of the 2005 Forest Plan.

Monitoring and Evaluation Implementation Guide (Monitoring Guide)

The Monitoring and Evaluation Implementation Guide (Monitoring Guide) is part of the overall monitoring framework for the Mark Twain National Forest. While Chapter 4 (Monitoring and Evaluation) of the Forest Plan is strategic in nature and provides programmatic direction for monitoring and evaluating Forest Plan implementation, the Monitoring Guide provides direction that is more specific to implement the monitoring strategy outlined in the Forest Plan. The Monitoring Guide details the methodologies and protocols used to conduct monitoring and evaluation tasks identified in the 2005 Forest Plan for the Mark Twain National Forest. The Monitoring Guide also assigns responsibilities for monitoring and evaluation tasks, and defines where monitoring data is to be stored.

The Guide is flexible and may be changed as new methodologies and techniques are developed. It allows the principles of adaptive management to be applied so that as monitoring techniques are implemented they can be evaluated for their effectiveness and efficiency (and revised as appropriate).

The Forest Plan ID Team developed this Monitoring Guide to facilitate data collection and storage of monitoring items using standardized monitoring protocols and corporate data/information storage.

Annual Monitoring Activities

Budgetary constraints may affect the level of monitoring that can be done in a particular fiscal year. If budget levels limit the Forest's ability to perform all monitoring tasks, then those items specifically required by law are given the highest priority.

Each Ranger District will conduct three monitoring field trips per year. In addition, the SO will lead three monitoring field trips per year, scheduled so that each Ranger District is visited every two years.

Annual Monitoring and Evaluation Report (Annual M&E Report)

Providing timely, accurate information about Forest Plan implementation to the decision makers and the public is a key requirement of the monitoring and evaluation strategy. The annual monitoring and evaluation report, which provides the analysis and summary of the monitoring results, is the vehicle for disseminating this information. As stated on page 4-6 of the 2005 Forest Plan this report, "...provides an opportunity to track progress towards the implementation of Forest Plan decisions and the effectiveness of specific management practices. The focus of the evaluation is in providing short and long-term guidance to ongoing management."

Evaluation is the process of transforming data into information—a value-added process. It is a process of synthesis that brings together value, judgment and reason with monitoring information to answer the question, "So what?" and perhaps, "Why?" Evaluation requires context. A sense of the history of the place or the circumstances (temporal and spatial context) are important to the evaluation of management activities. Evaluation describes movement from a known point (base line or reference condition) either toward or away from a desired condition. The desired conditions may or may not ever be fully achieved, but it is important to know if management activities are heading in the right direction. Evaluation produces information that is used to infer outcomes and trends: Conclusions will be drawn from an interpretation of evidence. These conclusions are documented in the Annual Monitoring and Evaluation Report.

The Annual Monitoring and Evaluation Report is not intended to be a comprehensive compilation of all the monitoring and evaluation described in the plan. While the report may provide summaries of data collected, it is primarily written to display evaluation of the data. The evaluation process determines whether the observed changes are consistent with Forest Plan desired future conditions, goals, objectives and what adjustments may be needed. Comparison of subsequent monitoring and evaluation reports provide a means to track management effectiveness from year to year and to show the changes that have been made or are still needed.

Key information displayed in the Annual Monitoring and Evaluation Report includes:

- Forest accomplishments toward achieving multiple use objectives for providing goods and services.
- The degree to which on-the-ground management is maintaining or making progress toward the desired conditions and objectives for the plan
- The effects of the various resource management activities within the plan area on the productivity of the land
- Conclusions and recommendations regarding the need to adjust monitoring or change the Forest Plan
- Status of other agency/institution cooperative monitoring
- Update of research needs
- Status of any Forest Plan Amendments or Administrative Corrections
- Documentation of any monitoring that has not been completed and the reasons and rationale (budget or staffing limitations or unexpected conditions, such as a severe fire season)

Use of Monitoring and Evaluation Information

This report is of value for the public and Forest Service leadership, managers and employees. The Annual M&E Report describes to the public how their public lands are being managed and how effectively the commitments made to them through the 2005 Forest Plan are being met. The information gained from the Annual M&E Report is used to determine how well the desired conditions, goals, objectives, and outcomes of the Forest Plan have been met. The Annual M&E Report also provides a readily available reference document for Forest Service managers as they plan, evaluate the effects of actions on resources, and implement future projects. The information can illuminate changes needed in project planning and implementation, or changes needed in Forest Plan direction.

Monitoring Activities in Fiscal Year 2010 (FY 2010)

This report documents monitoring activities that occurred between October 1, 2009 and September 30, 2010 (Fiscal Year 2010.)

The Forest Monitoring Team conducted three monitoring field trips to three different project areas during FY 2010. The Districts conducted 13 monitoring trips to 23 different project areas. Activities monitored included prescribed burns, timber harvest, salvage harvests, TSI/reforestation, understory removal projects, special use permits, hazardous fuels reduction, recreation sites, feral hog trap sites, windstorm recovery efforts, and a low-water crossing replacement. The reports of these trips are on file, and the results have been incorporated into this Annual report.

Monitoring Results

The monitoring and evaluation described in this report is organized by the specific Forest Plan Goal (found in Chapter 1 of the 2005 Forest Plan) that drives each of the monitoring questions.

Goal 1 – Promote Ecosystem Health and Sustainability

Goal 1.1 – Terrestrial Natural Communities

Question – Are restoration activities increasing plant species richness for woodlands, glades and forests?

and

Question – Are we moving toward desired condition for groundcover and natural community type structural characteristics?

The Mark Twain National Forest continues collecting high-precision level vegetation data across the Forest. We will use changes detected in data for the same sampling points to analyze, evaluate and make management adjustment decisions to determine whether we are moving toward desired conditions for groundcover, plant species richness and natural community structural characteristics. The Floristic Quality Assessment is used to calculate a floristic quality index (FQI) and mean total species within sampling plots across the Forest. This numerical index (FQI) is an expression of the relative integrity of an ecosystem and comparison of how close it resembles the high quality natural communities that occurred prior to European settlement.

Monitoring plots are located within areas of analogous vegetation characteristic of a given described natural community type (glade, open/closed woodland, savanna, fen and forest). Field botanists first install baseline monitoring plots (generally ranging from 12 to 100 plot settings) across a given representative project area. A plot setting consists of a 1/10th acre tree macroplot; 50 ¼ meter square quadrats and one Brown's transect for monitoring fuels. This data collection consists of three phases. Phase I is the initial baseline establishment of plots, usually preceding any major management treatment. Phase II is the repeat sampling, and Phase III is the analysis that takes place to detect change. Repeat sampling is done every 4-5 years assuming that some meaningful management activity intended to move vegetation toward desired conditions is carried out.

During FY 2008, contract botanists established and collected vegetation data on 36 plots at Medley Hollow on the Salem Ranger District, and entered tree macroplot data for 100 plot settings at Pineknot. During FY2009, contract botanists established and collected vegetation data on 16 plot settings at Grasshopper Hollow Natural Area on the Salem Ranger District, 18 plot settings at Hercules Glade Wilderness on the Ava/Cassville/Willow Springs Ranger District, and 36 plot settings at Cane Ridge on the Poplar Bluff Ranger District.

For FY 2010, botanists resampled and collected vegetation data in 100 plots at Pineknot on the Eleven Point Ranger District. Specifically, only species data within 50 ¼-meter square quadrats per 100 plot settings (5,000 total) were resampled. This was done following the recommendation in a report submitted by The Nature Conservancy (Ladd 2006) to resample every five years. The data entered into FS Veg includes estimates of cover classes for groundcover.

Botanists also completed vegetation sampling on 101 plot settings at Western Star (Houston/Rolla/Cedar Creek Ranger District), Cane Ridge (Poplar Bluff Ranger District),

Hercules Glade Wilderness (Ava/Cassville/Cedar Creek Ranger District), and Grasshopper Hollow (Salem Ranger District).

Question – What progress has been made towards meeting Objectives described in Chapter 1 of the Forest Plan?

Objective 1.1a – Within Management Prescription 1.1 areas, apply management activities to move natural communities towards restoration in the amounts shown in Table 1-1 [on page 1-2.]

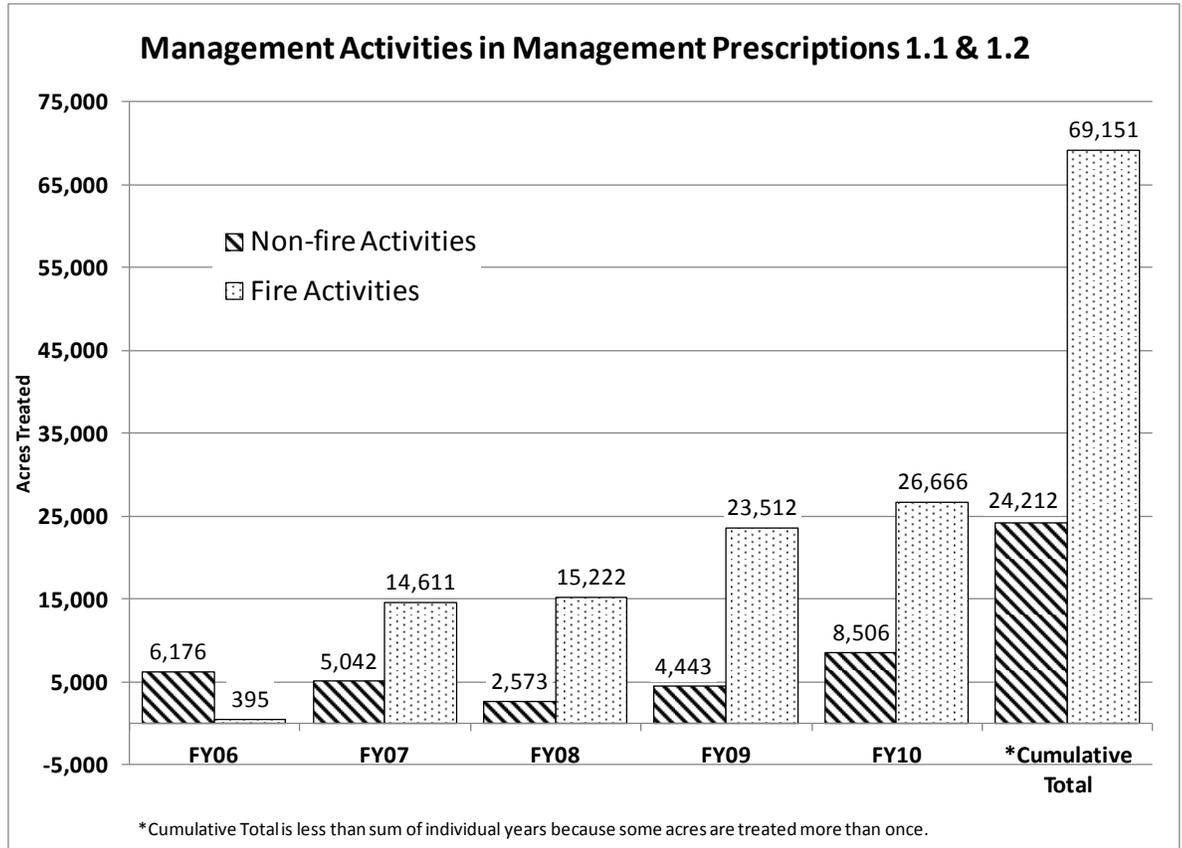
and

Objective 1.1b – Within Management Prescription 1.2 areas, apply management activities to move natural communities towards restoration in the amounts shown in Table 1-2 [on page 1-2.]

In September of 2010, the Forest Ecologist conducted a Forest-wide survey to summarize the total acres thinned and burned in all nineteen Management Areas under MP 1.1 and 1.2. The intent of this survey was to provide an estimate of how the Mark Twain National Forest was progressing in meeting these ecosystem restoration objectives. Ranger Districts were also asked to provide projected NEPA schedules for planned activities (past, present and future) for all MP 1.1 and 1.2 Management Areas.

The Pincknot Project Decision Notice, signed prior to the 2005 Forest Plan, is the first project to effectively contribute toward MP 1.1 restoration objectives; however, actual thinning to achieve desired structure and composition for pine woodlands has fallen far short of the planned treatments. While this is due in part to soft markets for small roundwood, in many cases the stands were not marked to remove the amount of timber necessary to meet the desired basal area and canopy closure objectives. Cane Ridge Project became the second EA to substantially commence thinning and burning in any Management Area 1.1 and 1.2 in 2009. That project has achieved only 13% of the minimum projected range for thinning, while it is within range for prescribed burning. Only the Carmen Springs Project is within the range for both thinned and burned treatment acres objectives. To date, there is no restoration activity in thirteen of the nineteen Management Areas (nearly 70%).

According to the information in the FACTS database, we have implemented vegetation treatments on almost 25,000 acres, and have conducted prescribed burns on some 69,000 acres in management prescription 1.1 and 1.2 since 2006 (see chart below.) A combination of activities, including thinning of the vegetation and prescribed burning, are required in order to increase plant species richness/ground cover and for restoration efforts to be considered successful. Although there is much overlap between the acres that have been burned and those that have been thinned, not all the acres that have been burned have also been thinned and not all areas thinned have also been burned. It is difficult with the information we have readily available to identify those acres that have had both vegetation treatments and prescribe fire.



There are an estimated twenty-seven NEPA planning units that incorporate all nineteen 1.1 and 1.2 Management Areas. Currently, the Mark Twain National Forest has active NEPA for seven of the nineteen Management Areas in MP 1.1 and 1.2. NEPA is scheduled or budgeted within two years for six additional Management Areas. Six Management Areas are currently scheduled for analysis beyond the ten years of the effective Record of Decision for the 2005 Forest Plan; three not till past 2015.

The 2005 Forest Plan established an objective of treating 95,000 to 146,000 acres during the plan period (2006 – 2016.) Based strictly on the acres we have burned, it would appear that we are making good progress towards meeting our objective; this is offset, however, by the fact that the acres treated with vegetation treatments is only 26% of the acres needed to meet the minimum objective. It appears that the MTNF is not keeping pace with Forest Plan restoration objectives. The question then arises: “Are various ecosystems at risk of irreversible plant and animal species loss as time passes?” The Nature Conservancy is of the opinion that certain fire-adapted ecosystems are at such a risk if treatments do not commence within 5 to 10 years.

Recommendations that will help achieve effective ecosystem restoration treatments to meet Forest Plan objectives include:

- Adjusting the NEPA planning schedule to place ecosystems at risk at a higher priority, especially the Upper St. Francois Mountains and Cedar Creek Prairie.
- Continuing to plan landscape-scale prescribed burns in moderate to high ranked REA (Rapid Ecological Assessment) areas; increase burn intensity effects in lieu of limited thinning.

- Find effective ways to address non-commercial (small roundwood) treatments, now a chronic pervasive problem across much of the Mark Twain National Forest. This includes strongly encouraging or mandating that Ranger Districts actively participate in collaborative partnerships, stewardship contracting and other “all-lands” conservation efforts.

Goal 1.2 – Non-Native Invasive Species

Question – To what extent is Forest management contributing or responding to non-native invasive species (NNIS)?

Non-native, Invasive Plants

Non-native invasive species (NNIS) include terrestrial and aquatic plants and animals. Infestations of NNIS increasingly threaten the integrity of the ecosystems and biodiversity on the MTNF. Of particular concern are those NNIS that are successful at invading natural habitats.

There are 33 species of NNIS (32 plants and 1 animal – feral hog) known to exist on the MTNF. There are 1,966 individual mapped and inventoried invasive plant infestations, totaling 32,428 acres.

Throughout the MTNF, NNIS plants are most abundant in regularly disturbed areas such as roadsides, grazing allotments and old fields. NNIS infestations associated with some management activities on the MTNF include 2,092 miles of roadsides, 1,037 acres of developed recreation sites, 145 acres of dispersed recreation sites, 250 acres of powerlines, and 5,396 acres of range allotments.

Feral Hogs

Missouri’s feral hog population continues to grow in size and expand in range. There are no accurate estimates for feral hogs on MTNF lands, but they are known to exist in many areas on the Forest. In FY 2010, the MTNF continued its efforts to eradicate feral hogs through a cooperative agreement with USDA-APHIS.

Question – What progress has been made towards meeting Objectives described in Chapter 1 of the Forest Plan?

Objective 1.2a – Control a minimum of 2,000 acres of existing non-native invasive species infestation.

Control means, as appropriate, eradicating, suppressing, reducing, or managing invasive species populations, preventing spread of invasive species from areas where they are present, and taking steps such as restoration of native species and habitats to reduce the effects of invasive species and to prevent further invasions (Executive Order 13112).

Control and management of invasive species is accomplished using a variety of methods, including:

- Cultural practices (e.g., controlled grazing, prescribed fire, smothering);
- Mechanical and Manual removal (e.g., cutting, digging, discing, girdling, pulling);
- Chemical control (e.g., herbicides);
- Biological control (e.g., release of selective biological control agents such as host-specific predaceous/herbivorous/pathogenic/parasitic organisms)

In 2010, the Forest treated a total of 5,238 acres of NNIP, including 1,333 acres treated by mechanical means (primarily mowing), 315 acres treated using herbicides, and 3,590 acres were accomplished by utilizing permitted livestock grazing (primarily on the Cedar Creek

and Ava Units). The treatment objectives achieved with these treatments was primarily containment. The majority of the herbicide use (282 acres) was used on sericea lespedeza on the Cedar Creek Unit, which drastically reduced the extent of the infestations on the treated units.

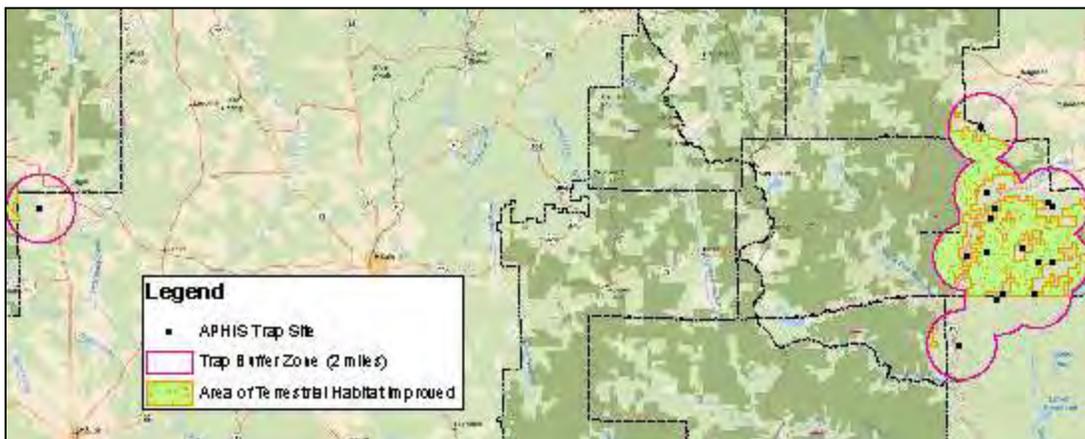
In 2010, 255 feral hogs on or near Forest Service property were removed by trapping. The number of hogs removed was a huge increase from the previous year, when 111 feral hogs were removed.

The combination of a healthy recruitment year, poor mast production, and an abundance of baited trap sites bordering the Bell Mountain Wilderness on the Potosi Ranger District resulted in seventy-one feral hogs being removed between July and August. The seventy-one feral hogs were captured in twenty-one different trapping events on eleven different properties. Trapping between October and December resulted in almost doubling the number of hogs caught, as 132 hogs were removed. November was by far the best month of the year with eighty-four hogs removed. These hogs removed in the fourth quarter were captured in thirty-five trapping events on thirteen different properties. The two approved traps on Bell Mountain Wilderness Area resulted in the capture of a group of fourteen hogs and a group of three hogs. To date, eighteen hogs have been removed from inside the Bell Mountain Wilderness Area at two approved trapping locations.

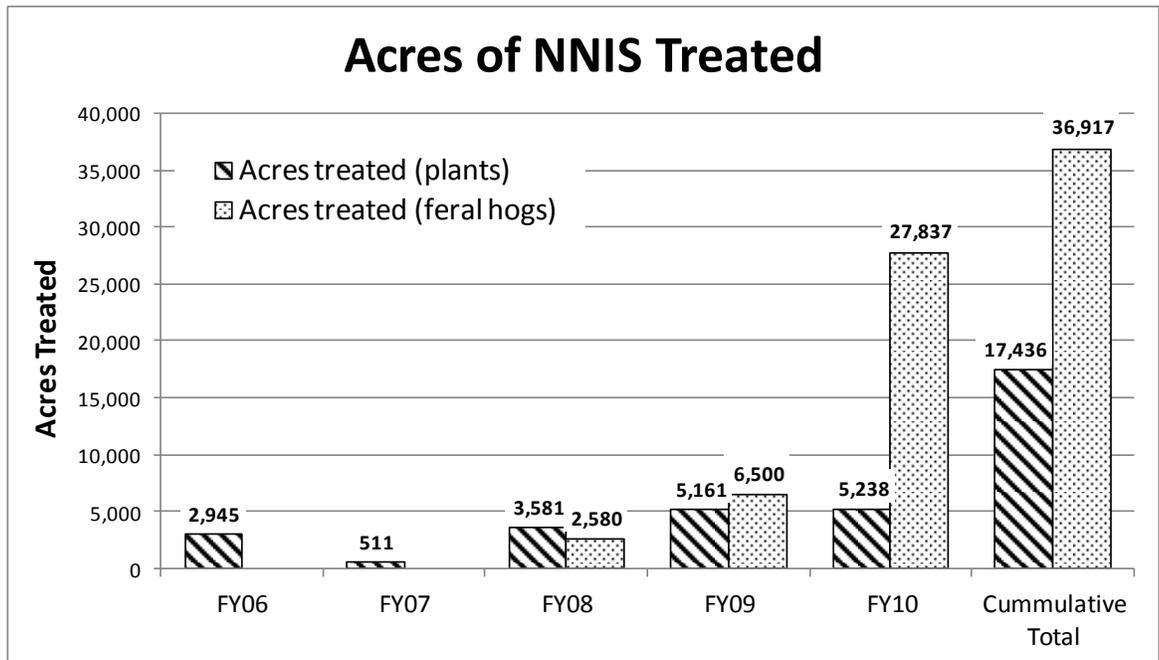
On the Houston/Rolla Ranger District a total of twelve hogs were removed for the year in one trap. Initially, one sounder of a sow and six pigs were captured and an additional four hogs were captured in three trapping events in November.

This increase in number of hogs trapped is anticipated to continue as the Missouri feral hog population continues increasing.

2010 APHIS Trap Sites and NFS lands affected



The following chart shows the acres treated to control NNIS during this plan period.



As can be seen by this chart, the Forest has already met and exceeded the objective for control of NNIS. This is partially due to a broader understanding of what is meant by “control.” Ideally, the Forest would be able to reduce the overall acres infested with NNIS by 2,000 during the plan period. The inventory of NNIS infestation on the Forest is an on-going process. An environmental impact statement is currently being developed to address potential chemical and biological NNIS treatments. This analysis will also include a method for evaluating and monitoring the effectiveness of NNIS treatments, which should provide more meaningful information for future monitoring reports.

Goal 1.3 – Soils, Watersheds, and Water Quality

Question – Are the effects of Forest management, including prescriptions, resulting in significant changes to productivity of the land?

The methods outlined in the Monitoring Guide for answering this question include qualitative assessments (mostly ocular). Field observations are then compared to the R9 Soil Quality Monitoring Methods (FSH 2509.18-2005-1) to determine if “detrimental soil conditions” are occurring. Monitoring trips were made across the Forest by both District and SO staff. Prescribed burn units, ATV trails, timber sale areas, and Special Use Permit (SUP) access roads were visited.

All prescribed burn monitoring reports indicate that an adequate amount of soil cover was retained during the burns. Soils also remained stable post burn, with no sheet erosion evident. Dozer line rehabilitation is one area that can be improved upon, however. One monitoring report from the Houston Ranger District indicated that several months had passed before water diversions were built on a line. Constructed firelines should be rehabbed as soon possible, weather permitting, to minimize soil erosion.

Sutton Bluff ATV trail monitoring reports indicated that rutting was occurring on some trails due to increased traffic and wet weather. Subsequent visits however, report that trail conditions had improved and rutting was greatly reduced.

Timber sale area monitoring yielded mixed results. Most sale areas have re-vegetated and show few signs of soil disturbance. In a few instances, sale area soils were deeply rutted by timber harvest equipment. Although the ruts were bladed smooth on the surface, deep soil compaction may persist.

All proposed drill sites were visited in the field to determine if additional stipulations were needed to comply with Forest Plan Standards and Guidelines. During FY10, seven sites were moved and three were dropped in order to comply with Forest Plan standards and guidelines, and protect resources. For example, the proposed location C-1654 on lease BLMA-040279 was staked in an Riparian Management Zone. A specific stipulation was added to the letter stating “**C-1654:** This site is unacceptable as staked. It is located in a Riparian Management Zone (RMZ) and needs to be moved at least 60 feet to the N/NE from its current location”.

During FY10, fifteen drill locations on four leases were monitored for compliance with stipulations. Stipulations monitored which were in place to eliminate/reduce affects to water quality, quantity, etc. included:

- Dig a pit for the drill cuttings.
- Seed and mulch drill sites and access roads.
- Places waterbars to facilitate drainage.
- Push any slash down slope to help filter water and stop sediment.

Stipulations had been followed at the fifteen drill locations and were effective at the time of monitoring. Riparian Management Zones and Watercourse Protection Zones adjacent to drill locations were monitored for soil movement. Special stipulations had been followed as well (including moving of sites away from roads, moving sites upslope away from WPZ’s, etc.).

Overall, implementation monitoring and inspection reports confirm that Forest Plan standards and guidelines for soil and water have been effective and soil productivity has not been degraded. However, isolated cases of detrimental soil disturbance have been documented, primarily due to illegal vehicle use and harvesting timber on wet soils. The Forest Soil Scientist will continue to assist District staff during project planning and implementation to achieve soil productivity objectives.

Goal 1.4 – Wildlife and Aquatic Habitat

Question – To what extent are forest management activities providing habitat for Management Indicator Species (MIS)?

Red bat – Bat surveys (mist-net and acoustic) were conducted on the Forest from May through October 2010. All Districts had mist-net surveys except for the Eleven Point Ranger District. Red bats were captured on every District surveyed in 2010. Of the 307 bats captured on the Forest 50 (16%) were red bats. Of the 387 bats captured on the Forest in FY 2009, 144 (36%) were red bats. In 2008, 96 of 288 (33%) bats captured were red bats. It is impossible to determine a trend from these data since the sample sites are different from year to year. The data does tell us that red bats remain a fairly common species on the Forest.

Birds – The Forest uses the USGS Breeding Bird Surveys to evaluate species trends for Missouri and the Ozark/Ouachita Plateau Region. There are 6 breeding bird surveys routes with some portion of the route running through National Forest System lands. Trends from

2000-2009 for the worm-eating warbler and summer tanager are stable to increasing (Sauer et al 2011). Trends for the same period for Bachman's sparrow are not available.

[Sauer, J. R., J. E. Hines, J. E. Fallon, K. L. Pardieck, D. J. Ziolkowski, Jr., and W. A. Link. 2011. *The North American Breeding Bird Survey, Results and Analysis 1966 - 2009. Version 3.23.2011* [USGS Patuxent Wildlife Research Center, Laurel, MD](#)]

Northern Bobwhite Quail – The statewide harvest and population status report for 2010 provides an index of quail abundance across the landscape (Emmerich 2010). Since only a small percentage of each county is observed, the index is suitable for data analysis at a large scale (regional or statewide). The statewide index continues to decline (index of 2.2 quail per 30-mile route in 2010). This is 17% below the 2009 index of 2.7. The number of quail counted in the Ozark Plateau region did not change from 2009, however the long term average shows a decline of 31.2%. The survey routes run mainly through private lands, making it difficult to analyze effects of management activities on MTNF lands on quail. In 2010, 881 acres of quail habitat were restored on the MTNF. Of that, 350 acres were completed with partners.

[Emmerich, Beth. 2010. Population Status Report, Northern Bobwhite and Ring-necked Pheasant – 2010. Missouri Department of Conservation]

Question – To what extent is Forest management contributing to the conservation of sensitive species and moving towards objectives for their habitat conditions?

Aquatic species – The Forest accomplished one project (willow plantings along Lost Creek on the Potosi Ranger District to help stabilize eroding banks) that would benefit aquatic and riparian species.

Glade species – In 2010, 662 acres of glade restoration projects (prescribed burns) were accomplished on the Forest (350 acres, Chute ridge, ACW; 104 acres, McClurg, ACW; 10 acres, Casey Glade, SAL; 178 acres, Elderberry Ridge, SAL).

Woodland and forest species – Some of the prescribed burns above also incorporated open woodland habitat improvement as well. About 1,940 acres of additional burning was completed that would improve habitat for woodland and forest species.

Bluff and cave species – Cave/karst specialist Randy Long monitored physical and biological conditions at several caves in 2010. In addition, Cave Research Foundation, under a Challenge Cost Share Agreement, visited several caves for inventory and survey.

Wetland species – In 2010, eleven fishless ponds were maintained on the Eleven Point Ranger District; 4 vernal pools were constructed on Poplar Bluff Ranger District, 30 acres of vernal pool habitat were maintained on Potosi Ranger District.

Bird population trends – No new data is available

Hellbender – The MTNF continues to participate as a member of the Hellbender Working Group and signed a Challenge Cost Share Agreement with MDC to help fund hellbender surveys and research in 2010.

Mussels, alligator snapping turtle, spotted skunk – No new data available

Question – To what extent is Forest management contributing to the conservation of threatened and endangered species and moving toward objectives for their habitat conditions?

Bald Eagle – Bald eagles were delisted in July 2007. However, we will continue to monitor bald eagles for at least five years following delisting. In April 2010, a helicopter survey for

bald eagles was conducted at Council Bluff Lake, Palmer Lake, Howell Lake, and Parole Lake. No bald eagles were observed nesting or roosting at any of these areas.

Indiana and gray bat – Snags, which provide important roosting habitat for Indiana bats, remain an abundant resource on the MTNF. In 2009, 2,038 acres of habitat for Indiana bats were restored on the Forest.

A cave and mine closure order was issued in 2010 for one year in order to protect hibernating bat populations from disturbance and to minimize the spread of *Geomyces destructans*, the fungus responsible for White Nose Syndrome. In 2010, a new bat friendly gate was constructed at Kelly Hollow Cave on the Eleven Point Ranger District in cooperation with the Cave Research Foundation and Missouri Department of Conservation.

There are no known cases of prescribed burns or timber harvest (non-salvage harvest) adversely impacting Indiana or gray bats in 2010.

Summer bat surveys in 2010 did not document the presence of any new Indiana bat maternity colonies on the Forest at the areas surveyed.

Hine’s emerald dragonfly – The USFWS designated critical habitat for the Hine’s emerald dragonfly in 2010. Several fens on the Forest are now critical habitat for the species.

In 2009, monitoring of Kaintuck Fen on the HRCC Ranger District revealed that a beaver dam had been constructed on the stream which was impacting the fen. In the winter of 2009-2010, a trapper removed three beavers from the beaver pond. In the spring of 2010 the beaver pond was breached by hand and the water level in Kaintuck Fen returned to normal. The site was monitored several more times during the year and the dam had not been reconstructed.

Mussels – No projects were completed in FY 2010 to help endangered or threatened mussels.

Question – Are specialized habitats (caves, fens, seeps, springs, cliffs, rock outcrops, wetlands, etc) being protected, maintained and restored?

Number of Specialized Habitat Sites Monitored

Specialized Habitat	ACW	EP	HRCC	PB	PF	SAL	TOTAL
Caves (TES)	2	1	1	0	2	2	8
Caves (non-TES)	0	1	1	2	0	2	6
Fens (HED)	0	0	1	0	2	2	4
Fens (non-HED)	0	0	1	0	1	2	4
Seeps, springs	1	0	0	0	0	0	1
Cliffs, rock outcrops	1	0	0	0	0	0	1
Glades	0	0	0	0	0	0	0
Other	1	4	0	2	3	0	10
TOTAL	5	6	4	4	8	8	35

Ava/Cassville/Willow Springs – Illegal ATV use at Indian Creek was noted. The biologist recommended closing off access to ATV’s at the creek.

Eleven Point – Non-native invasive plant infestations were noted at each of the four sinkholes (MA 8.1) visited this year.. At the two caves visited, some vandalism was noted and there was a need to post Closure Order signs and White Nose Syndrome posters.

Houston/Rolla/Cedar Creek – See above for report on Hine’s emerald dragonfly fen visited. Two caves were visited and no vandalism was noted.

Poplar Bluff - Illegal ATV use was noted near all of the sites visited. Increased law enforcement was recommended.

Potosi/Fredericktown – Visits to Cave Hollow Cave noted that the blow down was still effective at limiting disturbance at the cave. The lock and chain at the gate were replaced. The biologist also noted that while standing at the cave entrance she could smell fumes from the nearby mine smelter which made her feel ill. Several wetlands and vernal pools were monitored and numerous birds and amphibians were using these newly created/restored habitats. Streambank erosion at Courtois Creek near Berryman continues to get worse and recommendations were made to have a hydrologist and engineer look at the area. Barton Fen was monitored and the biologists noted that gravel from the road was washing into the fen and had breached the fence.

Salem - The biologist reported a breach in the gate at Cook's Cave. Measurements were taken to repair the breach. Debris was also removed at the cave gate.

Question – What progress has been made towards meeting Objectives described in Chapter 1 of the Forest Plan?

Objective 1.4a – Improve open woodland conditions on at least 10,500 acres to provide habitat for summer tanager, northern bobwhite, Bachman's sparrow, and eastern red bat.

In 2010, prescribed burning was accomplished on about 1,940 acres of open woodland habitat and about 662 acres of glade/open woodland complex. About 10 acres of glade habitat was improved using mechanical methods.

Objective 1.4b – Increase the proportion of managed native grasslands to that of exotic cool season grasses from the current 46% native grass to 55% native grass to provide habitat for northern bobwhite

Meeting this objective would require the conversion of roughly 2,300 acres of existing cool season grasses to native warm season grass. No grassland conversions were reported in 2010.

Objective 1.4c – Maintain forest, closed woodland or open woodland cover over 85% or greater of Mark Twain National Forest acres to provide habitat for worm-eating warbler.

FIA data show that there are 1.49 million acres of forestland on the Mark Twain National Forest. This is about 99% forest cover. Objective 1.4c states that over 85% of MTNF should be in forest or woodland cover. Obviously, the Forest is well above meeting this objective. However, most of the acres have a long way to go before reaching DFC for their natural communities.

Objective 1.4d – Treat at least 4,000 acres of glades to reduce woody vegetation to provide habitat for Bachman's sparrow.

As noted above, 672 acres of glades were treated to reduce woody vegetation to provide habitat for Bachman's sparrow and other glade species.

Objective 1.4e – Designate permanent old growth on 8% to 12% of each 2.1 and 6.2 management area, and on 15% - 20% of each 6.1 management area.

Meeting this objective would require a total of 80,800 to 119,200 acres of designated old growth (53,600 – 80,400 acres in MA 2.1; 11,400- 15,300 in MA 6.1; 15,700 – 23,600 acres MA 6.2). Permanent old growth was designated on 588 acres in 2010, bringing the Forest-wide total to 11,959 acres. Of the 588 acres designated, 234 acres were in MA 2.1 and 354 acres in MA 6.3. This is far from meeting Objective 1.4e and should be addressed by the Leadership Team.

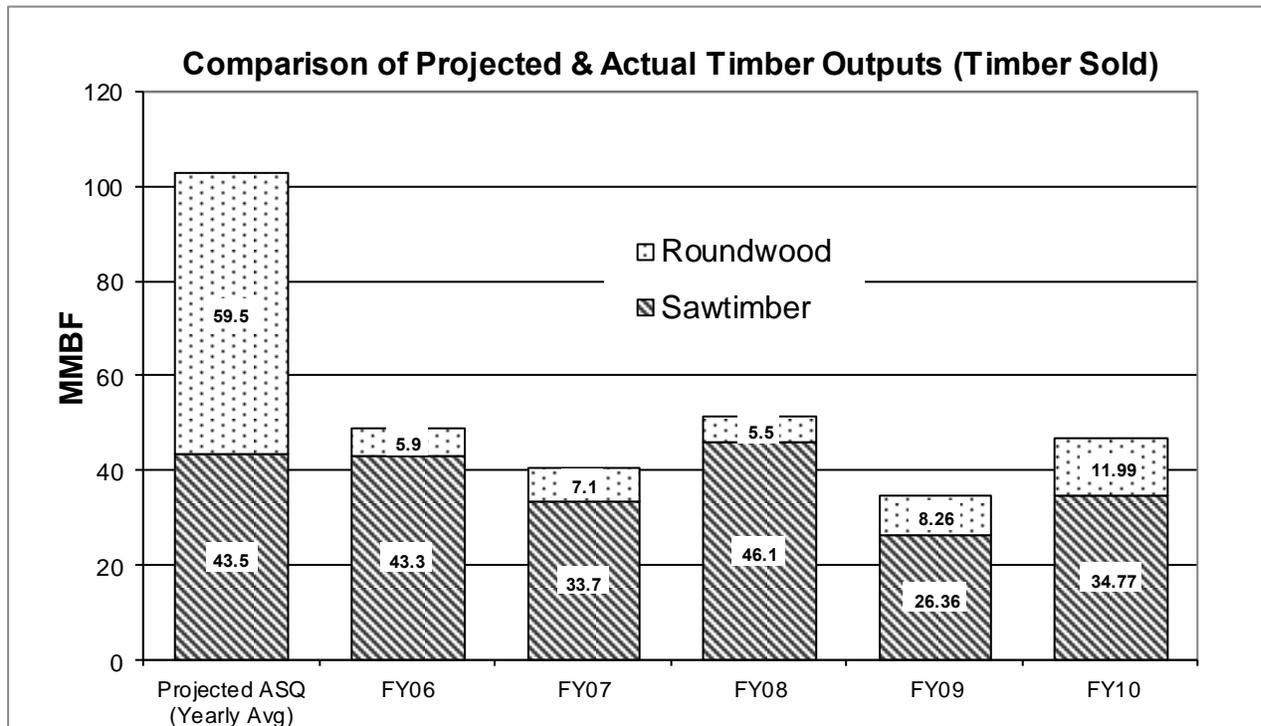
Goal 2 – Provide a Variety of Uses, Values, Products, and Services

Goal 2.1 – Public Values

Question – How close are projected outputs and services to actual?

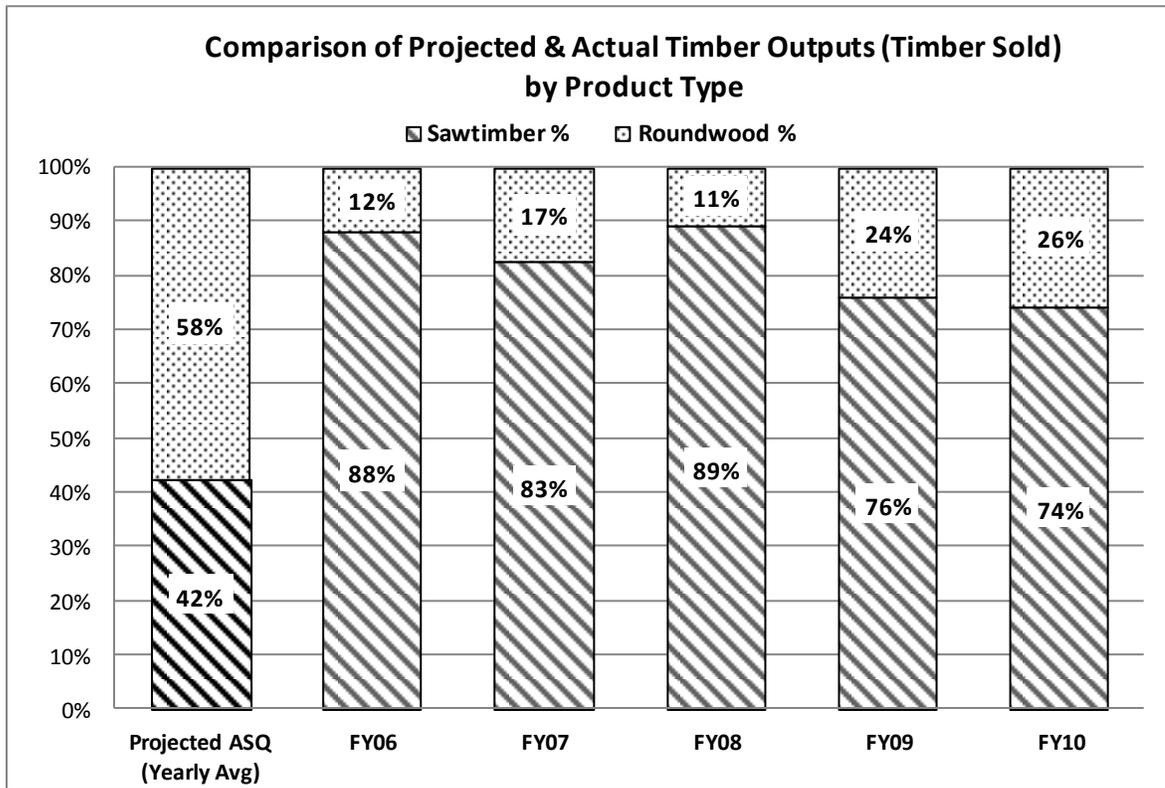
The Allowable Sale Quantity (ASQ) for the first decade of 2005 Forest Plan implementation is 1,030 million board feet (MMBF), which equates to an annual average of 103 million board feet. The ASQ is not a target; it is a maximum capacity of suitable land to grow timber volume on a long-term sustained yield basis under a given management scenario (Forest Plan). While the amount of timber sold in any given year can exceed the annual average, the total amount sold over the decade cannot exceed 1,030 million board feet (MMBF). The actual amount of timber sold in any given year may vary based on the budgets received, the Forest’s capability to implement projects, changes in the timber market, insect and disease outbreaks, and any number of other variables.

The following chart shows the timber sold for FY 2006 thru FY 2010. The total timber sold in FY 2010 increased by about 35% from FY 2009, the amount of sawtimber sold increased by 32%, and the amount of roundwood sold actually increased by 43%. The increase in roundwood was due partly to the increased amount of fuelwood available from storm damage, and partly to a favorable market for pine posts.



The model used to determine the ASQ estimated that roundwood products would constitute the majority of the products sold (59.5 MMBF or 58% of the total), with sawtimber products accounting for the remainder (43.5 MMBF, or 42% of the total.) This emphasis on smaller material is due to the heavy need for thinning of forested stands throughout the Forest. The following chart shows the sawtimber and roundwood sold as a percent of the total timber output. In FY10, sawtimber sold was a little less than three-quarters of the total output. The removal of roundwood increased from FY 09, both in absolute terms and as a percentage of

total timber sold. It still lags behind the projections made during the development of the Forest Plan, largely due to the lack of markets for small diameter material. Failure to remove this material, however, indicates that the thinning needs are not being met and hinders achievement of the desired condition for many areas.



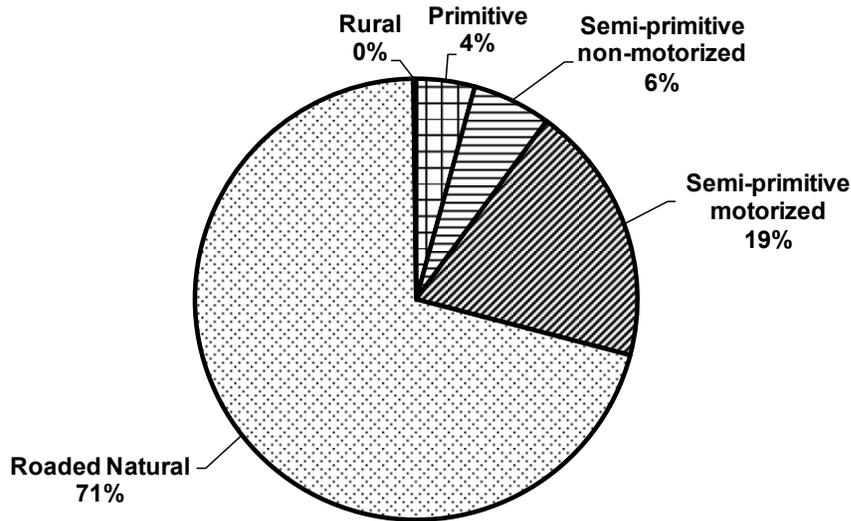
In addition to the projected timber output, the Forest Plan also estimated the proposed and probable management activities needed to work toward the vegetative and other multiple-use desired conditions and objectives of the Forest Plan, based upon modeling estimates. Again, these are not targets, and actual treatments during plan implementation may vary from these modeled outputs. The following table compares the estimated decade totals for the proposed and probable management activities to the actual activities implemented.

Management Activity	Unit	FY06	FY07	FY08	FY09	FY10	Cumulative Decade Total	Estimated Decade Total
Commercial Thinning	acres	3,340	3,679	1,720	1,505	267	10,511	99,800
Pre-commercial thinning and release	acres	3,278	3,662	3,857	2,362	3,175	16,334	40,200
Regeneration cut	acres	2,321	3,942	3,684	3,210	1,278	14,435	112,700
Prescribed Burning	acres	17,888	22,109	19,877	29,885	41,611	131,370	688,000
Hazard Fuels Treatment - Mechanical	acres	2,000	2,592	4,455	3,757	4,525	17,329	149,200

Question – To what extent is the Forest providing a range of motorized and non-motorized recreation opportunities that incorporate diverse public interests yet achieve applicable Management Area and Law Enforcement objectives?

The Recreation Opportunity Spectrum (ROS) is a planning tool used to identify, evaluate, and define the supply of recreation settings on the national forests. Each management prescription in the 2005 Forest Plan has a ROS class objective which describes the desired condition for

the lands allocated to that management prescription. The land allocations were designed to provide a range of recreation opportunities to satisfy diverse public interests. Approximately 90% of the MTNF is allocated to management prescriptions that allow motorized recreational activities, with the remaining 10% providing for non-motorized recreation. The chart below illustrates the allocations made by the 2005 Forest Plan. Changes to these percentages could result from land exchanges, purchases, or changes to the management area prescription for a given area.



Recreation Opportunity Spectrum Acre Distribution

There has been little change in the actual quantity or percentage distribution of recreation opportunities on the Forest since the revision of the Forest Plan. However, we have broadened the spectrum in various places by changing the level of development in our recreation facilities at identified recreation areas. In some cases, we are offering more highly developed sites with more amenities, by recruiting full-time hosts, replacing old, dilapidated, non-accessible facilities with newer, accessible ones, and developing some sites that have electrical hook-ups. In other cases, we have removed features that were no longer suitable, and are just providing a more primitive setting.

Over the past several years, the Forest has worked with several counties to offer hundreds of miles of roads where users can ride ATVs in compliance with state law by honoring the county ATV permit system. We provide information about those opportunities on our website, through handouts, and through individual and group contacts. Of the more than 2,000 miles of maintenance level 2 roads on the forest, (those maintained for use by four-wheel drives and other high clearance vehicles), over 1,700 miles are in counties that now offer permits for ATVs to be ridden on public roads. Of the over 450 miles of roads that are Maintenance Level 3, or suitable for passenger cars, more than 415 miles are in counties where permits are available for riding on those roads. Many of the Maintenance Level 2 roads offer the type of experience that jeep owners seek, but we have not done a very good job of letting them know about our roads. Attempts to work with the Missouri Off-Highway Vehicle Alliance on this and other issues have not been successful so far, because the organization is struggling and doesn't currently have the capacity to work with us.

While we do not have any trails designated for the side-by-side Utility Vehicles (UTVs) for most of the year, we do allow them on our open roads, in compliance with state law, and several counties offer permits that authorize use on public roads. With the republication of the

MVUMs on September 15, 2010, we opened the Sutton Bluff Motorcycle and ATV trails to UTVs <50” in width.

Findings/Recommendation:

The Forest has made incremental changes in the past few years to broaden the spectrum of recreation opportunities offered, in response to changing public demand. We continue to work with partners and to take advantage of opportunities, within our limited resources, recognizing that we cannot offer as many amenities as some visitors would like. We need to continue to actively seek opportunities to partner with others to meet the needs and desires of our visitors.

Question – Does Forest management of utility, recreation, and other use permits meet Forest Plan and agency direction?

The Special Uses program supports Forest Plan Goal 2.1 (Public Values) by issuing and administering permits and easements for transportation systems, (both for private landowners and County and State agencies) and utility rights of way, including electric, natural gas, water and communications. The program also supports Goal 2.8 (Recreation Opportunities) by authorizing the operation of recreation facilities, permitting events that allow a variety of user groups to recreate within the Forest, and authorizing outfitters and guides to improve the publics’ enjoyment of the Forest.

Special use permits are also issued to allow research of forest plants and species. The request and issuance of permits for various research projects increased in 2010. A decision was made to authorize these permits out of the SO to reduce the impact on the zone special use specialists.

Forest plan guidance addresses most of the concerns of forest managers and the public in the special use arena. In FY10, it was easy to include special conditions in authorizations to address site-specific issues. One of the most evident is the protection of threatened and endangered species and archeological resources. Both permit holders and permit administrators are able to work within the standards set out in the forest plan to ensure compliance.

During FY 2010 according to PAS data (1/11/2011), the Forest processed 129 permits, including amending 12 permits, exceeding our target by 62. The number of permits processed included road access that expired after 5 years (can be 10 year terms today). Permits issued for research and recreation events increased in FY2010. At the end of FY 2010, the MTNF was administering a total of 955 permits of various types. Of those, 245 were NOT administered to standards as tracked in PAS (“administered to standard” means that the authorizing documents are current, inspections have been done and any needed corrective actions taken, permit fees have been paid, etc.). Though we exceeded the forest target, this represents lack of good management. Administering permits to standard not only responds to the public need for use of land, but ensures fiscal responsibility as well.

During FY10, four types of specific permits were monitored on the Forest. On Potosi the permit with Steelville Telephone was evaluated. Activities covered by the permit include cable installation along a running buffalo clover population. The monitoring found all activities in compliance with the permits. The district wildlife biologist had flagged the trenching location to avoid the T&E species; in the future the area to avoid will be flagged and a distance from the area designated in the permit.

Three Private Road Special Use Permits were also monitored within the Cassville and Potosi units. All were in compliance and no additional mitigation measures were recommended,

indicating a thorough environmental analysis during the application review and permitting process. The road at Cassville had not yet been reconstructed as planned.

The Poplar Bluff District monitored a natural gas pipeline right-of-way permit. This permit needs to be renewed as an amendment to a current authorization on the Fredericktown District since both permits are with the same company. Consolidating the two permits will reduce administration costs and insure consistent compliance. There is quite a bit of illegal ATV use on the ROW resulting in moderate to severe soil disturbance and compaction. This trip's principal purpose was to determine the extent of resource damage to help in developing a strategy to reduce the unauthorized vehicle use and complete the environmental analysis for rehabilitation of the area.

Poplar Bluff also monitored the methane gas probes at the Republic, Inc. Landfill. Six new probes were installed along Highway T in fall 2009. The installation complied with permit clauses and special conditions. Missouri DNR monitors the actual results of the gas probes.

The Forest has reduced the backlog of expired permits from 194 in 2007, to 94 by the end of 2010 (reduced by 13 from 2009). Not all permits were reissued; some were closed and others combined by amending current permits (e.g. all Union Electric permits were combined into one Ameren UE authorization). The current backlog consists of 24 utilities, 59 roads, 3 buildings, 2 churches, 3 communication uses, and 3 sign permits. As wise stewards of the public trust, the Forest needs to continue to reduce the permit backlog and administer more permits to standard with current inspections and billings.

Though the backlog is being reduced, reissuance of utility permits is time consuming since all rights-of-way need environmental analysis completed. The zones have begun working with utilities to verify location and type of line (aerial or buried). Utility companies are trending to burying lines in an effort to decrease maintenance and insure service after weather events (ice and wind storms) in an effort to better serve their customers.

Though the special uses program on the forest continues to provide for the public uses of national forest land, we have areas of the program that need improvement. One zone appears to carry a disproportionate part of the target load, as evidenced by the number of permits issued, and the number of recreation and other permits administered to standard. A strategy should be developed to ensure other zones improve their administered to standard elements along with timely issuance of permits.

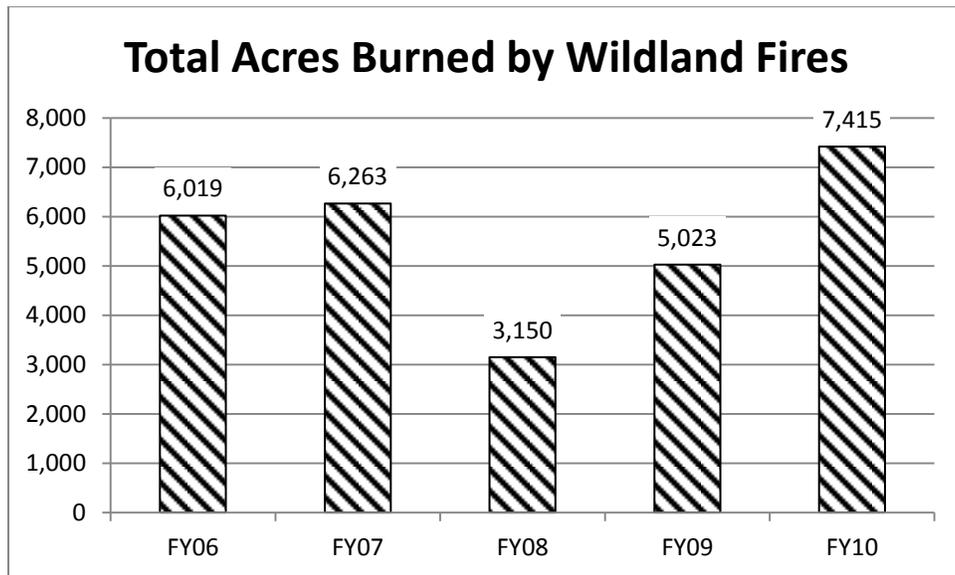
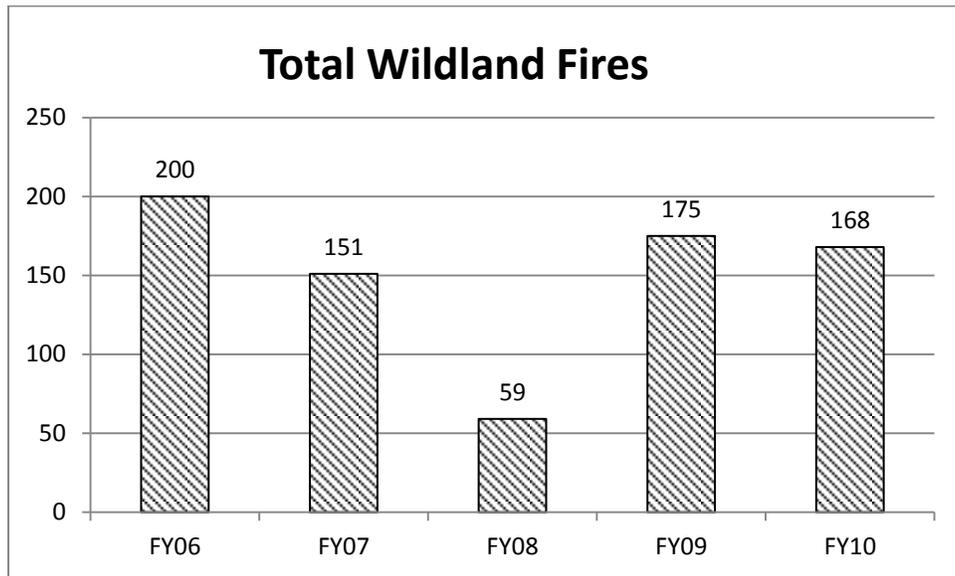
Goal 2.2 – Prescribed Fire, Fuels, and Wildland Fire Management

Question – What level of wildland fire on the landscape is appropriate and desirable?

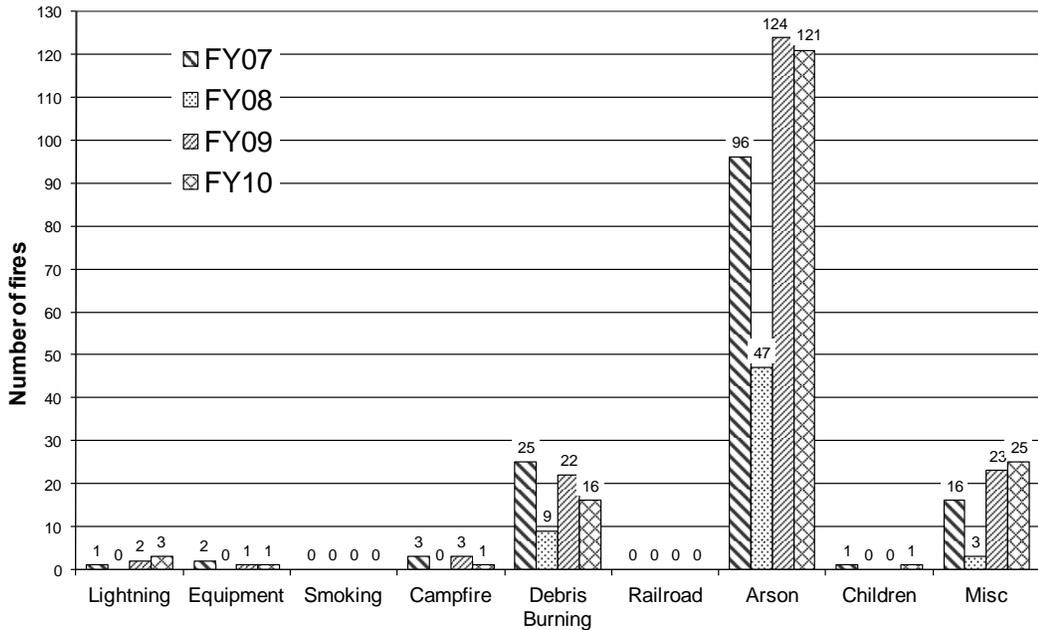
The MTNF Fire Management Plan and the Forest Plan guide appropriate management response for wildfires occurring on the Forest. In areas with an approved wildland fire use plan, the desire is to allow natural starts to burn under manageable objectives and conditions. Currently, only one area on the Forest, Hercules Glades Wilderness, has an approved plan. The Forest will continue to suppress human-caused fires to minimize negative consequences to firefighter and public safety. All wildland fires will be completely suppressed in areas where firefighter safety, public safety, or structures are at risk.

The total number of wildland fires (168) decreased from the previous year and the total acres burned increased slightly to 7,415 acres. The increase in acres can be attributed to the drought in the summer of 2010, and the heavy fuels located on the Salem and Potosi/Fredericktown Districts as a result of the derecho in May 2009. The fuels created multiple safety hazards to firefighters, and forced the decision to use indirect tactics in areas affected by the derecho.

These wildfires were allowed to burn to roads and natural fuel break, reducing risks to firefighters and the public.



Cause of Wildfires

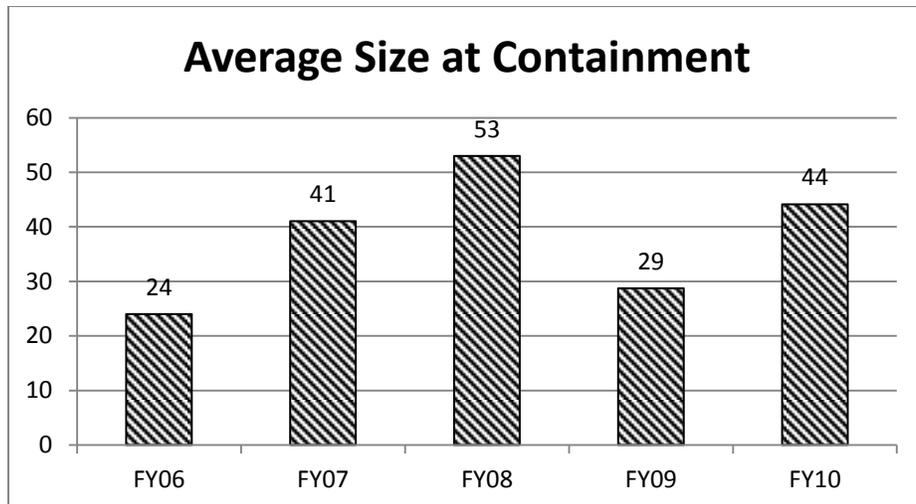


Question – To what extent is unwanted wildland fire on the landscape suppressed, and at what size were wildfires contained?

A full range of suppression responses are used on unwanted wildland fires, with specific actions taken to implement protection and /or fire use objectives. The 2005 Forest Plan includes direction to “Use existing natural or manmade barriers...instead of constructed fire lines for suppression activities when the value-at-risk is low and where practical and safe for firefighters and the public” (FP page 2-18.) Somewhat larger wildland fires are to be expected as the Forest adjusts its suppression actions to comply with this direction.

There were 168 wildland fires recorded in FY 2010, with a total of 7,415 acres burned. The average size of these fires at containment was 44 acres, which is somewhat more than in previous years. This a result of drought in the fall, and special tactics used in areas affected by the derecho.

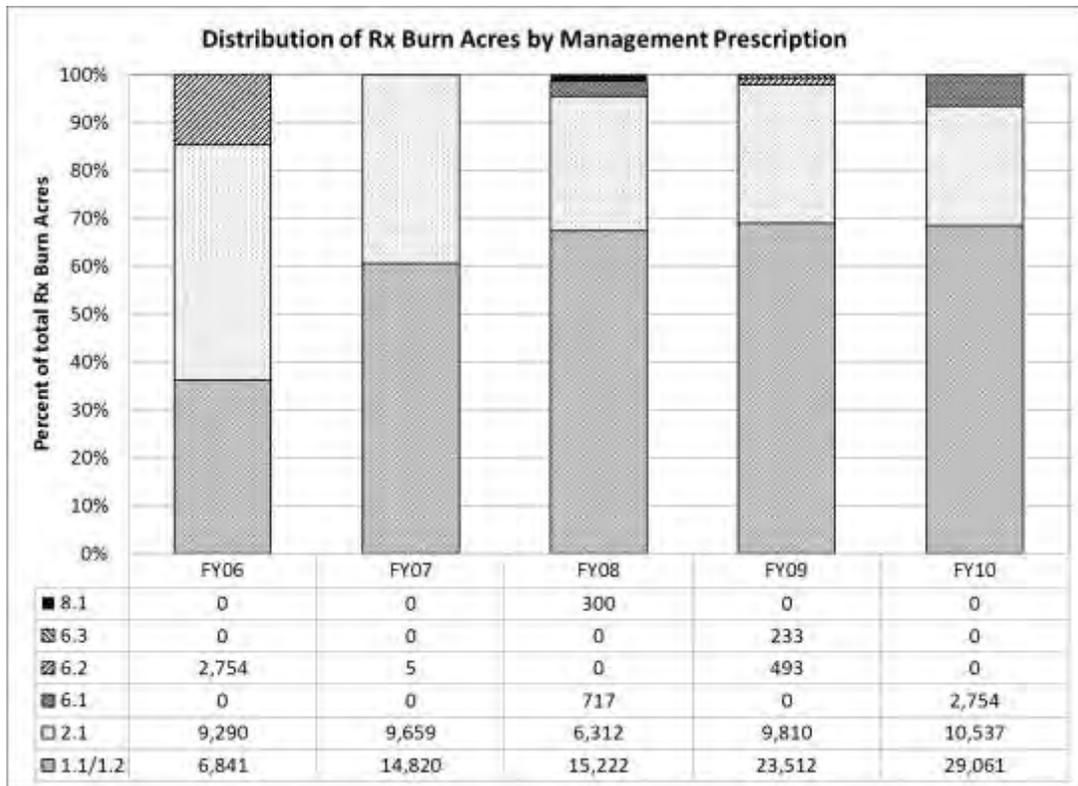
Average Size at Containment



Question – To what extent were prescribed fires used to mimic natural processes, maintain/improve vegetative conditions, and/or restore natural processes and functions to ecosystems?

MTNF conducted 34 prescribed burns on the Forest in FY 2010, for a total of 42,352 acres. We accomplished 5 burns with aerial ignition for a total of 37,504 acres. Of the 34 prescribed burns conducted, 27 were for hazardous fuel reduction, and 7 were for wildlife habitat improvement,. On these prescribed burns, various firing techniques were used to help emulate natural historical wildfire, while preventing damage to natural resources and overall meeting management objectives.

A total of 29,061 acres were treated across Management Area 1.1 and 1.2 to restore historic natural disturbances and improve ecosystem health with the use of fire. The percentage of total prescribed burns conducted in 1.1 and 1.2 management areas has increased from 36% in FY2006, to 69% in FY2010. This reflects the Forest’s efforts to emphasize burning in management prescription areas 1.1 and 1.2 as much as possible in order to enhance ecosystem restoration efforts.



Question – To what extent were prescribed fires used to treat fuel levels in high risk areas?

and

Question – How many acres of hazardous fuels reduction activities were accomplished within the Wildland-Urban Interface?

The Mark Twain’s priorities for prescribed burning are to treat areas of high to moderate risk around communities, and improve ecological conditions in management areas 1.1 and 1.2. The Forest reduced fuels on 29,062 acres. Most of these treatment units were located in high to moderate risk areas, as identified in the 2005 Forest Plan Fire Risk Assessment. The Forest reduced the heavy fuels on 13,580 acres in the wildland-urban interface through burning.

Question – Are fuel treatments (mechanical and burning) effective?

The effectiveness of fuel treatments should be measured both by the goals and objectives of a treatment area and the Forest Plan objectives. The Forest has been concentrating efforts in areas driven by reduction of fuel and the wildland-urban interface. We could be more effective by focusing on improving Fire Regime Condition Class, which is most likely attainable in areas covered by management prescriptions 1.1 and 1.2, where ecosystem restoration is the objective. For future projects, we need to refer to the Fire Risk Assessment cited in the 2005 Forest Plan FEIS Appendix G. This would increase efforts of reducing fuel loads in high to moderate areas, and improve the biodiversity on high potential sites.

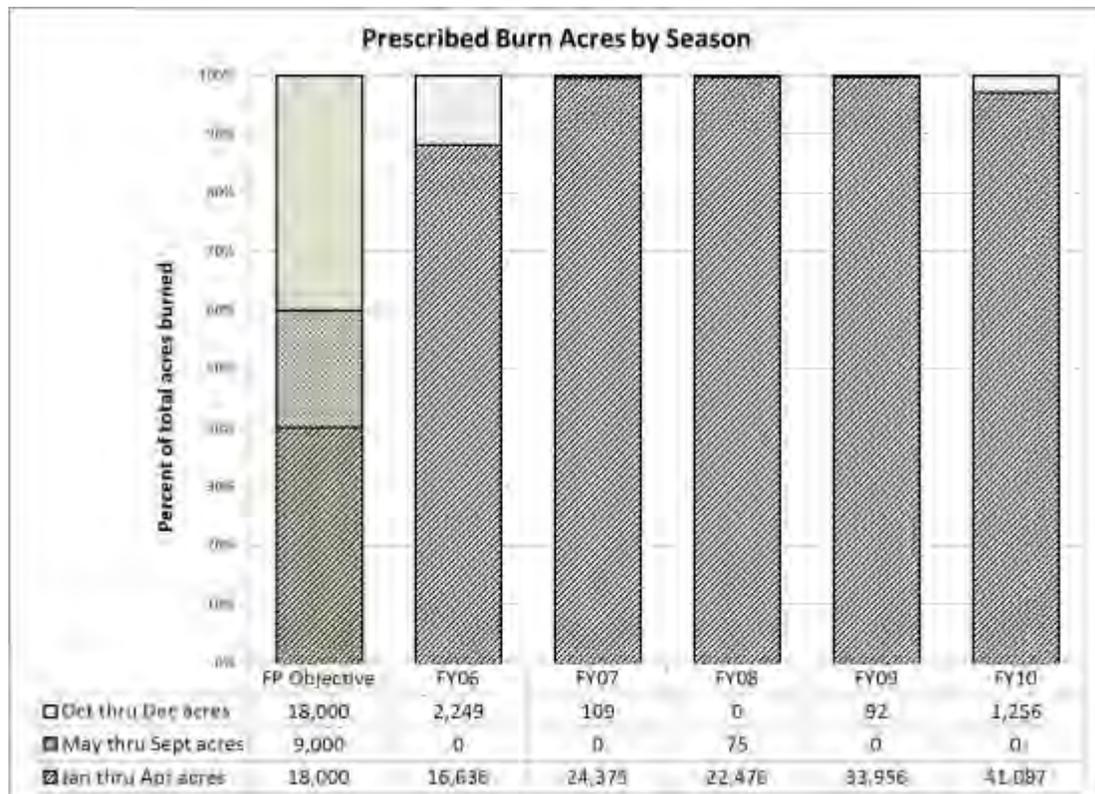
A review of various burn plans shows that most of our objectives are boiler plate statements from existing and resource related projects, which makes it difficult to adequately evaluate the effectiveness of our prescribe burns in reaching Forest Plan desired conditions. We need to develop more quantitative and qualitative site-specific objectives, and increase efforts on pre/post monitoring site conditions. This would produce better analytical data for future project planning.

Question – To what extent is the Forest management contributing or responding to air quality effects on ecosystems, human health, or human enjoyment?

As a result of conducting preliminary analysis and employing emission reduction techniques on all prescribed burns, no sensitive areas were impacted by smoke or emissions.

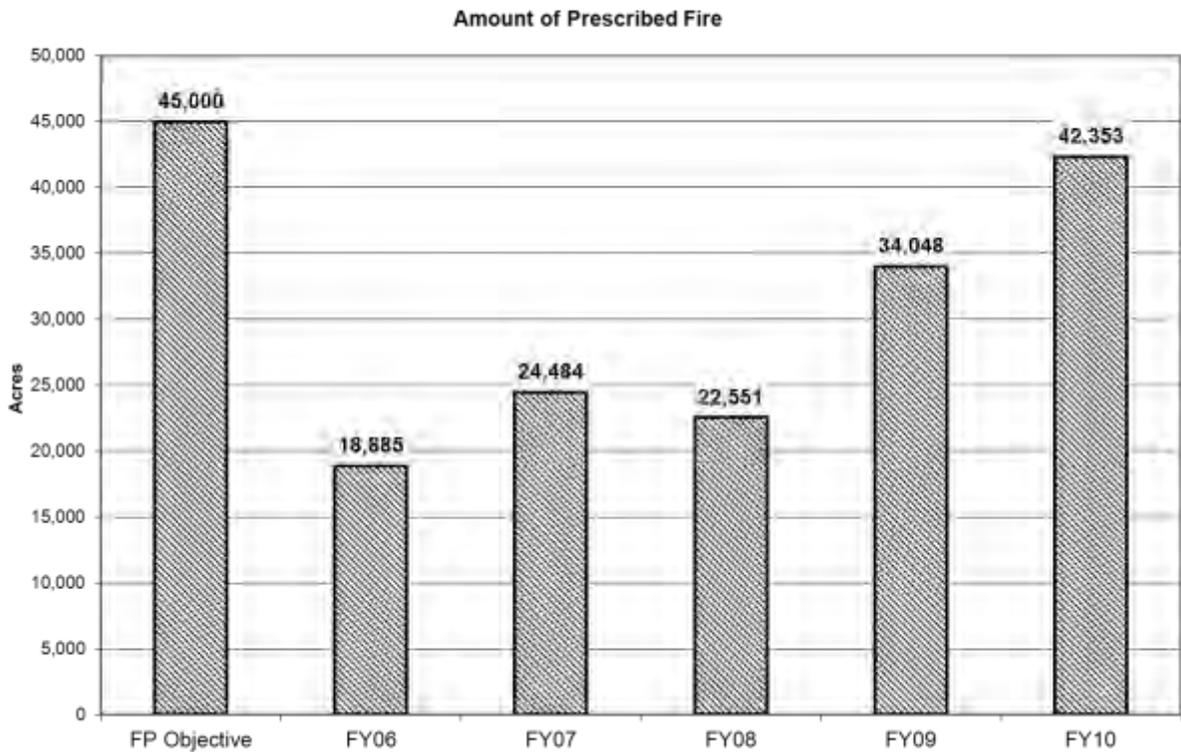
Question – What progress has been made towards meeting Objectives described in Chapter 1 of the Forest Plan?

Objective 2.2a – Prescribe burn up to 20% of total projected burn acres from May through September, and prescribe burn up to 40% of total projected burn acres from October through December.



Prescribed burns are designed to meet specific objectives described in the analysis and decision documents authorizing the burns. Under the 1986 Forest Plan, the objectives for prescribed fires were predominantly for timber, wildlife resources, and hazardous fuels reductions. Prescribed fires to meet these objectives are best conducted during the spring and fall seasons; summer burns, which could damage young hardwoods, are avoided. Under the 2005 Forest Plan, summer burns are needed to help meet restoration objectives. It would be expected that as more project decisions are made that include restoration objectives, the Forest would begin to conduct more summer burns. However, five years after implementation of the 2005 Forest Plan began, the Forest has made little to no progress towards the objectives of conducting 20% of prescribed burns during the growing season, and 40% during the fall. It is not clear whether this is due to a lack of guidance from the SO regarding burn parameters and guidelines for use in implementing growing season burns, deeply ingrained preferences for spring burning, or other reasons. The Forest needs to identify and address the obstacles to meeting these objectives.

Objective 2.2b – Use prescribed fire to reduce hazardous fuels and improve Fire Regime Condition Class on 45,000 acres or more per year.



The amount of prescribed burning that can be done is often restricted by weather conditions. The Forest is continuing its efforts to increase the acres of prescribed burning by being more efficient and conducting larger burns.

Goal 2.3 – Transportation System

Question – What are the effects of off-road vehicle use on the physical environment?

The Forest did not conduct any formal monitoring of effects of ATV use on soils in 2010. Due to inadequate staffing, rereading the soil monitoring plots previously established within

both Chadwick and Sutton Bluff ATV/Motorcycle Areas has not occurred when due for the past 5 years, so we have no quantitative data about the impact of the trails on soils. A condition survey of the Chadwick Trail System was conducted in preparation for the trail system planning effort that will result in the Master Plan

While none of the 2010 forest monitoring trips focused on ATV use or impacts, the Salem District monitored ATV trails on one trip. Only one of the approximately 20 district monitoring trips noted tracks caused by illegal ATV use within the project areas. This problem was noted in the natural Gas Transmission Corridor monitoring report on the Poplar Bluff Ranger District.

Informal observations of various trails in the Chadwick trail system in FY2010 indicate that on steeper trails that had not been regularly and adequately maintained, erosion and sustained damage occurred during the significant storm events that took place in 2008 and early 2009, and erosion continued in 2010. The Ava Ranger District personnel took photos on several trails that show deep trenching in the trail tread, erosion down to bedrock in some cases, and loss of several inches (or even 1'-2' or more) of soil. The Ava District staff completed detailed Trail Assessment and Condition Survey (TRACS) inventory of Chadwick Trails 123A and 110. The data from these inventories is stored in district files, but was not entered into the corporate database (INFRA).

The May 8, 2009 derecho caused so much blow-down along the trails and elsewhere on the forest that the maintenance focus in 2009 was on removing downfall, not on maintaining tread. As a result of this, the unusually heavy rainfall events, and the unusually wet season, the ATV trails on both districts are in worse condition and have more damage than normal. Salem Ranger District conducted formal monitoring of the Sutton Bluff ATV trails on May 12, 2010. While all of these trails were closed by blowdown from the storm, one trail (#4) was re-opened in June, and three more trails were re-opened later that year or early in 2010. The monitoring trip noted that the first trail re-opened had significant rutting and some erosion, compared to those opened later. A September inspection showed that with routine maintenance this had been reduced, and the overall trail condition had been improved. The monitoring team concluded that the stream crossings were stable, and that the watershed appears to have been adequately protected, in accordance with Forest Plan Standards and Guidelines.

Findings/Recommendation:

ATV trail monitoring has been minimal since the Forest Plan was updated, and most of the informal information that has been collected has not been shared beyond the district level. The majority of the ATV monitoring tasks listed in the Monitoring Guide are not occurring to the extent described, or the data is not being shared.

We don't know how much damage is occurring, but we do know that the significant storm events damaged the trails and caused erosion. Evaluation of monitoring and conditions did not occur in FY10 as prescribed in the Monitoring Guide, which requires an evaluation every 5 years conducted by an interdisciplinary team consisting of at least the forest recreation manager and soil scientist, the recreation managers from Ava RD (Chadwick) and Salem RD (Sutton Bluff), law enforcement, and a wildlife biologist. This should be completed in 2011, and included in the 2011 monitoring report (summarizing the first 5 years of operation under the revised Forest Plan). Documentation available at the district level needs to be organized, labeled, and kept in an official file, updated regularly, (especially before and after heavy maintenance activities) and shared with the Forest Integrated Resources staff.

Question – How effective are forest management practices managing OHV use?

Illegal use was formally reported in only one of the district monitoring reports in FY10, compared to three of about 20 district monitoring reports FY2009, and just one in 2008. At the forest level, it was not reported or noted as a problem in contacts with the general public, our partners, or in casual conversations with other forest employees.

The Poplar Bluff District noted evidence of illegal ATVs during their monitoring of a CenterPoint natural gas transmission on March 29, 2010. The following is their documentation of the damage that is occurring to the resources, and efforts the district employees are making to prevent the illegal use and damage with the limited resources available to address it.

“Project Background: Over the past several years, unauthorized vehicular access to the pipeline by off-highway vehicles has resulted in moderate to severe soil disturbance and compaction at several locations on National Forest-managed lands within the pipeline corridor. The principal purpose of monitoring trip was to determine extent of environmental damage in preparation for developing a strategy for addressing current resource conditions resulting from unauthorized vehicular use occurring on the pipeline, Ozark National Recreation Trail, and nonsystem roads and unauthorized trails on National Forest lands. There is a need to address damaged sensitive areas, soil erosion and compaction on an estimated 25-30 acres, more or less within the project area.

Monitoring Item #3 – Soil Productivity - Soil conditions were unacceptable.

Monitoring Item #11 – Heritage Resources - Additional site or project specific mitigations are needed. A strategy is being developed to address current conditions. Strategy will include CenterPoint Energy participation.”

Monitoring Item #17 & 18 –Recreation Opportunity Spectrum - ROS objectives were not met in the design and implementation of the project activit.. The strategy will address these issues. Management activities have resulted in a changed condition that would move the area into a different part of the spectrums. Unauthorized off-highway vehicle (OHV) use has resulted in changes to the pipeline corridor itself.

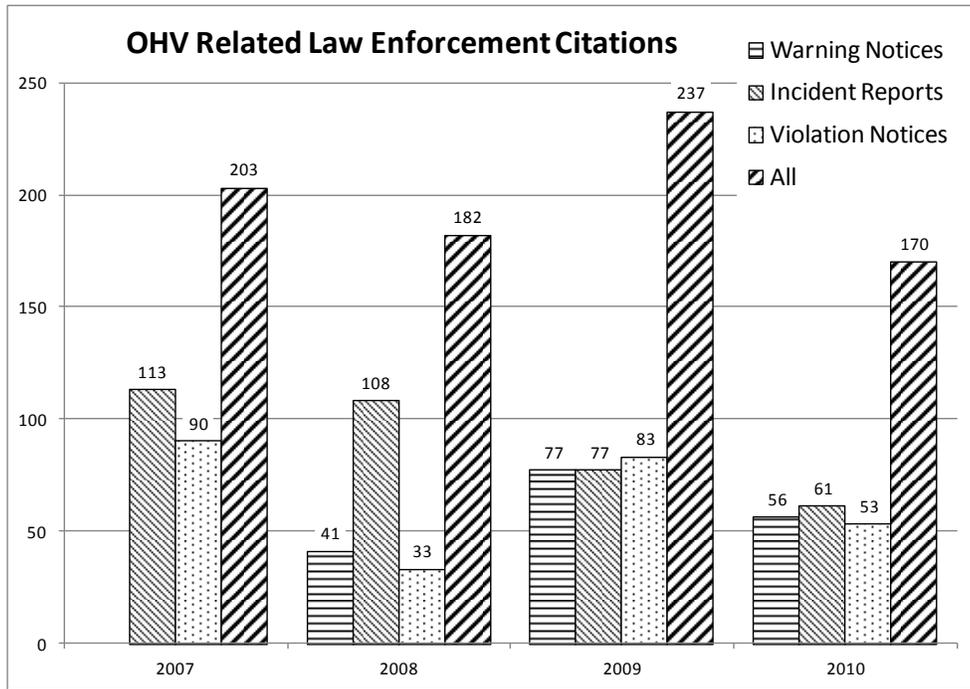
Monitoring Item #19 – Special Uses - The use has not been conducted in compliance with protection measures specified in the SUP. There any needed mitigation measures that should be included in future permits.

Monitoring Item #40 – Watershed and Riparian Health – Moderate to severe soil disturbance and compaction is occurring at several locations on National Forest-managed lands within the pipeline corridor. Some ruts are up to a foot to 18” deep in several locations along the pipeline; some are in sensitive riparian and wetland areas. COE is experiencing similar problems, but is addressing most problems on their lands in partnership with the district and CenterPoint.

This unauthorized access has also impacted parts of the Ozark National Recreation Trail, where unauthorized vehicles have illegally accessed the trail from the pipeline corridor. In addition, some CenterPoint facilities and/or improvements have been vandalized or destroyed.

Law Enforcement Officers (LEOs) conducted saturation patrols to provide additional enforcement in some of the areas with known violations, including at the Chadwick ATV and Motorcycle Area.

Total citations and warnings issued by LEOs and FPOs for OHV violations were significantly lower in number compared to those issued in the past couple of years, as shown in the chart below.



While a few of those citations were issued to drivers who did not have a valid license, were driving recklessly, or were causing resource damage, the vast majority (94%) were for driving off a National Forest Road or designated motorized trail (see following table.)

2010 Monitoring of Illegal OHV use - MTNF

		Warning Notices	Incident Reports	Violation Notices	TOTAL
36CFR	USE OF VEHICLES OFF-ROAD				
36 CFR	It is prohibited to operate any vehicle off National Forest System, State, or County roads:				
261.15a	Without a valid license as required by State law	5	0	3	8
261.15d	In violation of any applicable noise emission standard established by any Federal or State agency.	0	0	0	0
261.15g	Carelessly, recklessly, or without regard for the safety of any person, or in a manner that endangers, or is likely to endanger, any person or property.	1	0	0	1
261.15h	In a manner which damaged or unreasonably disturbs the land, wildlife, or vegetative resources.	0	2	0	2
261.15i	In violation of State law established for vehicles used off roads.	0	0	0	0

		Warning Notices	Incident Reports	Violation Notices	TOTAL
	FOREST DEVELOPMENT TRAILS				
36 CFR	When provided by an order issued in accordance with 261.50 of this subpart, the following are prohibited on a forest development trail:				
261.55 (a)	Being on the trail.	0	0	0	0
261.55(b)	Using any type of vehicle prohibited by the order.	0	0	0	0
261.55 (d)	Operating a vehicle in violation of the width, weight, height, length, or other limitations specified by the order.	0	0	0	0
261.56	When provided by an order issued, it is prohibited to possess or use a vehicle off National Forest system roads.	50	59	50	159
	TOTAL	56	61	53	170

Two of the top ten offenses relate to ATVs and off road vehicle violations.

Top MTNF Offenses over Six--Year Period

Code	Offense	2004	2005	2006	2007	2008*	2009*	2010	All
36 CFR 261.56*	Vehicle off roads	199	182	157	135	171	211	159	1,214
36 CFR 261.54D*	Violate limitations	254	169	216	178	182	237	427	1,663

**Offense codes changed during this period, but the table still summarizes the violations above.*

In September 2010, the Forest produced nine Motor Vehicle Use Maps (MVUMs) to cover all districts of the Mark Twain National Forest, utilizing the national protocol. These are single purpose maps developed to display the roads, trails and areas on the national forest where motorized use is allowed. The maps conform to a strict set of national standards, but lack some of the information needed for easy understanding, and to date have not been very useful to the public or to the Forest. Each year the maps get a little easier to use, and more copies are distributed to the public. Because of lack of support from the justice community, Law Enforcement officers continue to cite most offenders for other related offenses rather than for violation of the regulations and routes displayed on the MVUMs. However, since this is the fifth year that the MVUMs have been produced, they issued more warning notices and more violation notices to persons violating the (MVUMs) than were issued in each of the previous three years.

No photos or documentation of resource damage by OHVs were submitted to the forest recreation staff, but the Ava Ranger District does have some on file.

Findings/Recommendation:

Despite the education and law enforcement efforts, illegal ATV use is still occurring and is still adversely impacting resources. We need to devise ways to more effectively curtail this activity by devoting more time and resources to this area, by strengthening partnerships, developing more partnerships, developing new strategies, or a combination of these.

Goal 2.4 – Timber Management

Question – Are harvested lands adequately restocked after five years?

In FY 2010, first and third year stocking surveys were conducted on a total of 4,433 acres of natural regeneration sites, and 3,063 acres were certified as adequately restocked. Harvested lands have been adequately restocked after five years.

Because adequate natural regeneration has not been a problem on the Mark Twain with appropriate site preparation, the requirement for a first-year stocking survey in stands with natural regeneration is being eliminated. Successful natural regeneration will be certified on completion of successful third-year stocking survey. First and third-year plantation survival surveys in planted areas will still be required.

Question – Are insect and disease populations compatible with objectives for restoring or maintaining healthy forest conditions?

In FY 2010, 6,318 acres were salvaged, largely in response to wind damage from a derecho. The Forest continues to experience widespread oak decline, and large areas of the Mark Twain remain at moderate to severe risk of oak decline. NEPA requirements make it difficult if not impossible to deal effectively with much of our oak decline. Programmatic EA's on a District-wide, Zone, or Forest-wide basis should be developed to allow timely and effective response to this serious problem.

Except for the ongoing problem with oak decline, no major problems with insects or disease have been identified. Management activities for oak decline and for salvage of wind thrown timber are compatible with objectives for restoring or maintaining healthy forest conditions.

Goal 2.5 – Geology and Minerals Management

Question – Are mineral exploration, development, and production stipulations effective and being followed as recommended in project designs?

Requests for 24 drill locations on five leases on the Salem and Potosi/Fredericktown Ranger Districts were received during FY2010. Upon receipt of the requests, records were checked to determine whether heritage surveys had been conducted, proximity to known sensitive species or habitats, and proximity to other management activities (such as timber sales). All sites were then visited in the field to determine any stipulations needed to comply with Forest Plan standards and guidelines. Each location was also mapped with GPS.

If field visits determined that the site(s) could not comply with FP S&G's as staked or could cause resource concerns or conflicts (such as too close to a road or within a road, in RMZ, etc.), the locations were moved or dropped.

The mining company, BLM and Forest Service representatives were able to agree on drill site locations within the parameters set forth in the Forest Plan and resource needs. During FY10, seven sites were moved and three were dropped in order to comply with Forest Plan standards and guidelines. Two sites had not been surveyed for heritage resources coverage and a stipulation was added that the sites could not be cleared or drilled until concurrence was received from the State Historic Preservation Office. Another site was placed in an active timber sale. Saw logs within the site were counted and a stipulation was added that these trees should be pushed to the side and any damage to merchantable timber should be reported immediately.

In order to facilitate monitoring and record keeping, a drill site layer (developed by Tom Forbes and Sarah Bradley) is being updated and maintained. All drill locations are added to this layer so a GIS record of drilling activity on the Forest is available.

During FY10, fifteen drill locations on four leases were monitored for compliance with stipulations. Stipulations monitored included:

- Dig a pit for the drill cuttings.
- Seed and mulch drill sites and access roads.
- Place waterbars to facilitate drainage.
- Close temporary roads with a berm or slash.

Stipulations had been followed at the fifteen drill locations and were effective at the time of monitoring. Special stipulations had been followed as well (including moving of sites away from roads, moving sites upslope away from WPZ's, etc.).

Goal 2.8 – Recreation Opportunities

Question – To what extent do Forest recreation facilities and opportunities meet accessibility, health, safety, cost, and maintenance requirements and achieve resource and social objectives?

Natural disasters had less impact on recreation facilities this year than in the past couple of years. Work continued on rehabilitation of developed and dispersed recreation facilities, including trails. In consideration of flood incidents on this and other forests, additional signs and website notifications were posted, to increase public awareness of potential flooding hazards.

Pre-season developed recreation facility inspections were conducted by district personnel at all developed recreation sites, focusing on identified hazard trees, and other critical maintenance work. All sites were determined to meet at least all of the critical performance standards, which include health and safety standards. More extensive condition surveys are conducted at each recreation facility at least every 5 years, and results of those surveys are recorded in the INFRA database. These surveys were conducted at 20 recreation sites in FY 2010. This information is used to determine whether or not our sites are being maintained to standard, and if not, what work needs to be done to bring them up to standard. Currently, there are 112 recreation sites listed in the database, and only 70, or 62% of them “meet standard,” defined as having total deferred maintenance value of less than 10% of the site current replacement value. This is a significant improvement over the 43% that met standard in FY 2009, partially as a result of special funding that the forest received through the American Recovery and Reinvestment Act of 2009 (ARRA) and Recreation Site Improvement (RSI) project initiatives. The forest has over \$4 million in deferred maintenance needs identified at our recreation sites.

We continued to implement the 5-year Program of Work that resulted from our Recreation Facility Analysis, and to eliminate deferred maintenance, moving the Forest closer to our goals of balancing our recreation facility needs with available resources, and maintaining sites to standard. Some of the actions we implemented were:

- Continued volunteer agreements for management of developed recreation sites at Marble Creek Recreation Area, Paddy Creek Recreation Area, and Falling Spring Recreation Area
- Under the Recreation Site Improvement projects initiative, we completed the contract for renovation of Cobb Ridge Campground, and completed design work and contracted renovation of the following recreation areas: Sutton Bluff, Greer Crossing, Watercress, Float Camp and Deer Leap. These actions enabled us to reduce deferred maintenance and provide facilities that better meet visitor needs at key recreation fee sites.

- Completed a contract for development of a “design-build” contract to renovate the Chapel Hill Bathhouse at the Chapel Hill Beach in the Council Bluff Recreation Area.
- Secured the services of volunteer hosts and/or contract mowers/cleaners at the following sites: Big Bay, Cobb Ridge, Council Bluff, Greer Crossing, Lane Spring, Loggers Lake, Markham Springs, Paddy Creek, Red Bluff, Silver Mines, Sutton Bluff, & Watercress

In FY 2010, we received results of the visitor surveys conducted in 2008 through the National Visitor Use Monitoring program.

One example of those results is displayed below:

Satisfaction Element	% of Respondents Answering “Satisfied”		
	Developed Sites	Undeveloped Areas (GFAs)	Designated Wilderness
Developed Facilities	73.9	80.1	34.1
Access	78.1	89.5	64.7
Services	69.1	81.5	43.8
Feeling of Safety	92.3	91.6	89.8

Detailed results can be found at: <http://www.fs.fed.us/recreation/programs/nvum/>.

Findings/Recommendation:

While most forest recreation facilities are maintained to meet critical standards, the amount of deferred maintenance is significant. We have focused on reducing our facilities and taken advantage of partnerships and unique funding opportunities to reduce maintenance and improve facilities and recreation opportunities. We are making progress, but we need to continue to make conscious efforts to reduce our maintenance needs. While most visitors were satisfied or pleased with our facilities and opportunities, the low ratings for satisfaction with wilderness facilities, access and services seem to indicate that many of the Wilderness visitors are not seeking an experience compatible with designated Wilderness. We need to improve the information that they receive before they arrive, so that their expectations are more in line with the setting and experience they find in Wilderness, and that they choose to visit other areas if this is not the experience and setting that they are seeking.

Question – To what extent are Forest management activities in semi-primitive management areas within the Recreation Opportunity Spectrum Objectives (ROS)?

Compliance of forest activities with the prescribed ROS class was addressed in about half of the district monitoring trips. Monitoring field trip reports that addressed this topic all noted that the activities met the objectives of the assigned ROS class.

The Forest has not had any reports showing non-compliance with this objective in the past several years. We need to continue to incorporate ROS management into our project planning, as is currently happening.

Goal 2.11 – Wilderness Opportunities

Question: How well is the Forest meeting established national Wilderness Stewardship Elements?

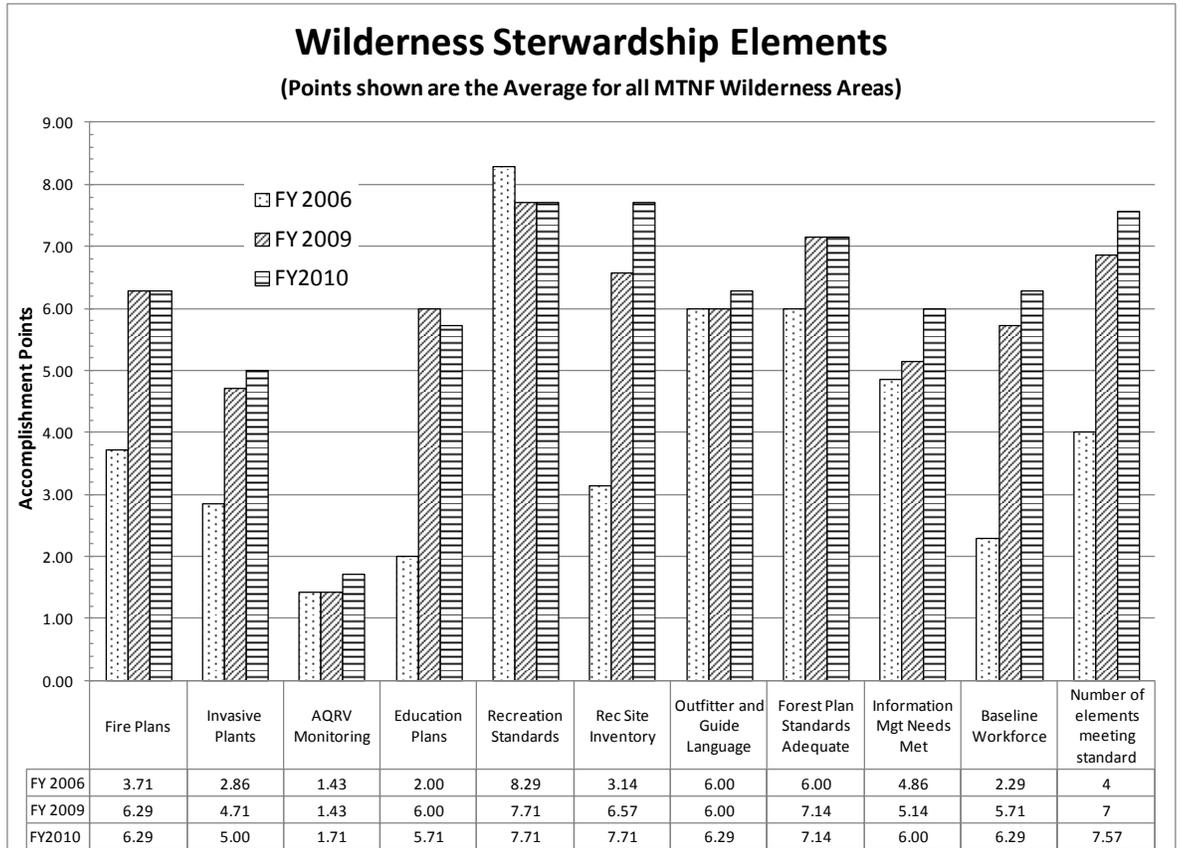
In FY2010, one district monitoring trip focused on wilderness management and removal of feral hogs through an interagency agreement between the MTNF and APHIS-WS. That trip found management of Bell Mountain to be consistent with the Forest Plan direction and standards, and was considered with the other management and informal monitoring in reporting Wilderness accomplishments.

In 2005, the Forest Service National Leadership defined ten critical management elements for protecting and preserving our wilderness resources. At the same time, they adopted a “10-Year Wilderness Stewardship Challenge” (10YWSC) to reach a minimum level of stewardship, defined as earning at least 60% of the possible 100 management accomplishment points in these elements in time for the 50th Anniversary of the Wilderness Act in 2014.

Those stewardship elements define actions and accomplishments in the areas of:

- Fire Plans – to restore a natural fire regime in each Wilderness
- Non-Native Invasive Species – to restore natural landscapes by identifying and removing invasives
- Air Quality Monitoring – to learn about trends and conditions and develop strategies for improvement
- Education Plans – to help visitors better appreciate and protect Wilderness values
- Recreation Standards – to protect opportunities for solitude and unconfined recreation
- Recreation Site Inventories – to provide information necessary to protect wilderness character
- Outfitters and Guides – to assure that outfitters utilizing Wilderness are partners in its management
- Forest Plan Standards – to assure that Wilderness character will be protected
- Information Management Needs – to identify and prioritize data needed for management
- Baseline Workforce – to assure minimum staffing to accomplish goals.

This chart below shows the average number of points (out of a possible 10 points) in each management element that MTNF Wildernesses scored from 2006 to 2010.



Findings:

Based on overall scores, the Mark Twain National Forest made progress in meeting the management elements in FY2010 in five of the seven Wildernesses, the Piney Creek Wilderness score dropped by four points, and the Hercules-Glade Wilderness score remained at 73 points. With these management improvements, four of the seven Wildernesses (Bell Mountain, Hercules-Glade, Irish and Devils Backbone) met the minimum stewardship goals, compared to just one in FY2009. Average scores increased in 6 of the 10 elements, and the total average score increased by over 3 points.

Recommendation:

Keep monitoring Wilderness management and the specific elements that affect it on an annual basis. Make specific plans for accomplishment during the work planning process, targeting specific elements for improvement, and developing a strategy to make those improvements. Monitor and report the results.

List of Preparers

The Mark Twain Forest Monitoring Team prepared this Annual Monitoring and Evaluation Report. While many individuals were involved in monitoring activities, the following staff directly contributed the details and expertise necessary for this report.

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<http://www.fs.usda.gov/mtnf>

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