

FY 2009

MONITORING AND EVALUATION REPORT



CHIPPEWA NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

USDA FOREST SERVICE | 2010

FISCAL YEAR 2009 MONITORING AND EVALUATION REPORT

APPROVAL AND DECLARATION OF INTENT

I have reviewed the FY 2009 Monitoring and Evaluation Report for the Chippewa National Forest that was prepared by forest employees during the winter of 2009 and 2010. I am satisfied with the findings and intend to consider recommendations made during project development and plan revision. The Monitoring and Evaluation Report meets the intent of both the Forest Plan (Chapter IV) as well as the 36 CFR 219.

This report is approved:

Carolyn Upton
CAROLYN UPTON
Acting Forest Supervisor

1/04/11
Date

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EXECUTIVE SUMMARY

FISCAL YEAR 2009 MONITORING & EVALUATION REPORT

Chippewa National Forest

This is the fifth Monitoring and Evaluation Report compiled under the 2004 Chippewa National Forest Plan. The plan was signed by Regional Forester, Randy Moore, on July 30, 2004. Our Monitoring and Evaluation plan is described in Chapter IV of the Forest Plan. As explained in detail in Chapter IV, monitoring items consist of mandatory components you will find in every forest plan as well monitoring items that are tailored to address issues raised through public scoping and interdisciplinary team review.

Monitoring and Evaluation Report

The information gained from the Monitoring and Evaluation Report is used to determine how well the desired conditions, goals, objectives, and outcomes of the forest plan have been met. However, at this point, five years after implementation of the revised Forest Plan, trends, patterns, and results are just beginning to emerge. Evaluations and conclusions that would lead to changes in the Forest Plan are not yet clearly defined. Rather, this report focuses more on what we monitored, how it was monitored, what we found and recommendations.

Highlights from the Report

- Tribal Rights and Interests – The Forest continues to work with the Leech Lake Band of Ojibwe to strengthen cultural awareness, consultation, communication, employment and outreach, partnerships, and resource management.
- Social & Economic Stability—The FY 2009 timber target of 37,110 MBF was comparable to the FY 2008 timber target. The actual volume offered and sold slightly decreased from 35,497 MBF in FY 2008 to 35,414 MBF in FY 2009 a difference of 83 MBF. Volume under contract has increased annually since FY 2005. Sales with a high pine component have been in demand where as those with aspen and hardwoods have encountered depressed markets.

Given the current rate of thinning, clearcutting, and uneven-aged management *harvests*, some shifts will need to be made in timber harvest planning and implementation treatments to meet the decadal Forest Plan objectives. At this time, clearcutting and uneven-aged management are lower than projected and thinning considerably higher. However, there is a large volume under contract that has yet to be harvested. Given the recent market for pine, the numbers and percentages may shift as sales are completed. *Acres planned* show similar patterns. Clearcutting and uneven-aged management are below the Forest Plan projected percentages, thinning exceeds it, and shelterwood harvest is closer to the projected treatment percentages. Thinnings, particularly in red pine

stands, are based on recent inventories that show stands are growing faster than projected and require multiple entries to maintain their growth.

- Outputs—The Forest continues to move toward wildlife habitat and stream restoration, sensitive plant restoration decadal objectives. Similarly, the Forest has been very active in identifying roads to be decommissioned although actual miles decommissioned is limited by available funding to accomplish the work on the ground. There has not been any new ATV or snowmobile trails designated, or new water access sites developed.
- Costs—The allocated budget slightly increased over FY 2007 but was not significantly higher than in FY 2005. In addition to the allocation, the forest entered into 51 new agreements and 39 modified existing agreements for a total value of \$3,136,022. Of these, two agreements were in support of the American Recovery and Reinvestment Act (ARRA) for a value of about \$1,500,000. Agreements cover a wide range of projects including job training/development, fire protection, youth work programs, internships, dumpsite cleanup, habitat improvement, workshops, road decommissioning, and tree planting. The Forest also has seven Stewardship Contracts approved or awarded.
- OHV—Management of OHVs on the Forest has been an ongoing effort beginning with an analysis in 2006 that culminated in a decision in 2007 on roads open (and closed) to OHV use. Since that time efforts continue to educate users on roads they can legally use, to reduce illegal OHV use, and to decommission roads not longer needed for active management.
- Transportation—The program for FY 2009 exemplifies the benefits of maintaining a road system through cost effective partnerships. Consequently, the Forest maintained nearly 300 miles, improved 62 miles, and decommissioned 22 miles of road. This was accomplished by working with other local agencies. Nearly \$2 million dollars in ARRA stimulus funds was shared to improve routes throughout the forest and through coordination for road maintenance and dust stabilization.
- Wildlife: Management Indicator Species (MIS)— Gray wolf, eagle, and goshawk were monitored in 2009. The current *gray wolf* estimates far exceed the recovery plan goal for wolves in Minnesota. The 2007/2008 population estimate was 2,921 wolves which exceeds the recovery plan goal of 1250-1400 wolves. The MN DNR concludes there has been no significant change in the distribution or abundance of wolves in Minnesota since 1997.

For *eagle*, monitoring emphasis was to resolve the status of many nests that had not been relocated over many years. Processing of this data is still ongoing. Monitoring also included activity flights and productivity flights that had not been conducted since FY 2007.

For *goshawk*, the number of known active breeding territories and number of successful breeding pairs has more than doubled, from 7 in 1997 to 14 in 2009 and successful breeding pairs from 5 to 12 over the same time period. The 12 successful breeding pairs

produced 15 young. The number of breeding pairs and suitable habitat conditions are expected to increase over time with implementation of the Forest Plan. No population trends are available for the Western Great Lakes population of northern goshawks or for the portion of the population that falls within the Chippewa NF.

Regional Forester Sensitive Species—In FY 2009, 17,124 acres were surveyed for RFSS. A total of 182 new RFSS locations were detected. Management activities on all projects complied with Forest Plan direction. Therefore projects either had no impact or were not likely to cause a trend to federal listing or loss of viability on the Forest.

- Wildlife: Non-native Invasive Species (NNIS)—Monitoring of NNIS has been limited in the past. With a new forest botanist on staff more effective coordination and cooperation with LLBO staff and other agencies, and the completion of the Non-native Invasive Plant Management environmental assessment in FY 2010, the Forest is in a better position to effectively address, control, and monitor NNIS on the Forest.
- Vegetation Composition and Structure—Information presented compares the 2009 numbers to Decade 1 estimates. Although there is some variation based on the landscape ecosystem (LE), in general the forest needs to increase the amount of jack pine, red pine, white pine, spruce-fir, oak and paper birch on the landscape. The numbers indicate there is a surplus of northern hardwoods and aspen. More detailed information is presented for species composition and age class distribution for each of the landscape ecosystems. For all the LEs, the amount of 0-9 age class which is created through even-aged regeneration harvests is below the proposed projections for Decade 1. For uplands as well, the Forest falls short of meeting the decadal projections.
- Timber—Regulations require that regeneration harvests be adequately restocked within five years. 38% of the sites with regeneration harvests in 2004 were fully stocked and certified by the end of 2009. Drought and deer predation have contributed to difficulties in getting adequate stocking on some sites within the five year timeframe. Actions have been taken to increase stocking.
- Insect and Disease--An evaluation of insect and disease trends did not indicate increases in populations that warranted management concern or actions. Vigilance in monitoring is warranted with the pending threat of both gypsy moth and emerald ash borer. Prescribed fire and prolonged drought from 2003-2009 have created stress conditions favorable for bark beetle build-up and damage.
- Fire -- Based upon the monitoring of the wet meadow burning, the forest is meeting the hazardous fuels reduction objectives for the burn. While the objectives are being met, the benefits from a fuels standpoint are short lived due to the fact that a new crop of fuel (meadow grass) will regenerate during the growing season. The Forest is successful in accomplishing the hazardous fuels objectives of the upland burn units. Person caused fires are the main cause of wildland fires. All wildland fire is deemed to be unwanted and actively suppressed to protect life and natural resources.

- Soils—Six harvest units were monitored for soil compaction and rutting. The Minnesota Voluntary Site-Level Guidelines suggest no more than 1-3% of the area for roads and landings. All the landings and skid trails appeared to meet this guideline. Evidence of rutting on non-frozen ground in one of the sites monitored suggests that monitoring should continue on non-frozen ground. Overall, mitigation measures are being implemented, are appropriate and effective in preventing damage to the soil.
- All resources: monitoring of harvest units-- Monitoring of harvest units on the Deer River District indicates that overall district personnel did a good job of implementing prescriptions, design features, mitigation measures, BMPs, and activities as planned in the EA. A group of units were monitored after harvest and another group pre-harvest.

Post-harvest monitoring:

- Sale design features and mitigation for riparian/wetlands were implemented and effective.
- Recommended that the soils scientist and hydrologist spend time working with the marking crew to identify seasonal ponds and wetlands.
- Seeding mixtures for roads need to be re-evaluated and adjusted to include only native species.
- Generally, mitigation for wildlife was implemented and effective. Legacy patches (small islands of residual trees), adequate numbers of green reserve trees, and species for diversity were left. Sufficient numbers of snags generally occurred in the regeneration units. Except for one unit within a goshawk territory, protection for TES species was implemented and effective. In this case, the 50% crown closure (a mitigation measure) was not met because the species distribution and condition of trees did not lend themselves to achieving this objective.
- Soils were well protected. Harvest activities were conducted within the seasonal restrictions. There was little or no evidence of rutting or compaction. Coarse woody debris retention was adequate per *Voluntary Site-Level Guidelines* (2005). Slash was retained on site for low nutrient soils.

Pre-harvest monitoring:

- A forest-level assessment, perhaps including use of existing CSE, to help identify how many stands are converting naturally and how they might play into achieving objectives would be beneficial.
 - Recommend providing wetland identification and delineation training for layout, marking crews, and sale administrators.
- Land Adjustment-- During the past five years, land adjustment resulted in a net gain of approximately 73.95 acres to the Forest. The increase in acres reflects the acquisition of the Star Island parcel and the reduction due to the Small Tract Act Conveyance parcels. The outlook is for limited funding that is focused on a select few high priority tracts.
 - Minerals--There are no large mineral material contracts on the Forest. There are several small sand and gravel special use permits issued on the Forest. The majority of the CNF gravel pits need updated pit plans. Reclamation of several gravel pits has been

accomplished in the past and several more pits have been marked as needing restoration. There are several pits that have been recommended for expansion or exploratory drilling. Monitoring site visits have shown that permittees are implementing their project in accordance with their operating plans.

- Special Uses-- The majority of the permittees remain in compliance. A resort supplement is currently under draft. Several expired utility and road permits need to be renewed or closed.
- Air Quality-- Air quality impacts measured on the CNF are dominated by sources outside the CNF. Northern Minnesota is currently meeting EPA standards for those air pollutants that have standards.

Many water bodies on the CNF are listed as impaired by MPCA due to mercury contamination of fish. More than 95 percent of the mercury in Minnesota surface water comes from the atmosphere. In 2007, the EPA accepted Minnesota's mercury Total Maximum Daily Load (TMDL) plan that concludes that atmospheric mercury deposition must be reduced by 65 percent to achieve compliance with aquatic mercury standards.

- Research and Studies-- There are a number of studies and research projects on the forest. Several are included in this report. The Goblin Fern administrative study is drawing to a close and a final report will be completed in 2010 or 2011. A study by Northern Research Station looks at the structure and complexity of old-growth red pine forests and the relationship between stand age and carbon storage. Ongoing studies include long-term soil productivity and non-native invasive earthworm research.

Other Project Monitoring

Monitoring of projects, large and small, occurs on all the districts and involves numerous resource professionals across the forest. Examples include sale administrators checking for compliance; field checking of timber marking to meet prescription objectives; conducting regeneration surveys to determine stocking levels, checking to determine if harvest units incorporate and reflect the silvicultural prescriptions and EA direction, checking application of mitigation measures to determine if they are appropriate and effective. Often times the monitoring is informal consisting of general field observations. Other times monitoring is more formal and entails following protocols; the results are generally included in the monitoring and evaluation reports.

Public Involvement

We continue to publish the *Chippewa National Forest Quarterly*, a schedule of proposed actions and decisions that implement the Forest Plan. We encourage the public to become part of our management process by commenting on project proposals through the NEPA process. Information about planning our projects and project contacts can be found on the Internet at [www.fs.usda.gov/chippewa/Land & Resource Management/Projects](http://www.fs.usda.gov/chippewa/Land%20&%20Resource%20Management/Projects).

I. INTRODUCTION

This is the fifth Monitoring and Evaluation Report compiled under the 2004 Chippewa National Forest Plan. The plan was signed by Regional Forester, Randy Moore, on July 30, 2004. Our Monitoring and Evaluation plan is described in Chapter IV of the Forest Plan. As explained in more detail in Chapter IV, monitoring items consist of mandatory components you will find in every forest plan as well as items that are tailored to address issues raised through public scoping and interdisciplinary team review.

The annual monitoring and evaluation report (M&E) provides an opportunity to track progress towards the implementation of revised 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. The M&E report includes components such as:

- (1) Forest accomplishments toward desired conditions and outputs of goods and services.
- (2) Forest Plan Amendment Status.
- (3) Status of other agency/institution cooperative monitoring.
- (4) Summary of available information on MIS or comparable species.
- (5) Summary of large scale or significant projects or programs.
- (6) Update on research results

Chapter II consists of monitoring for elements from the Monitoring Matrix of the Forest Plan tied to specific resource areas. Each of these includes some background information, a brief explanation of the monitoring activities and protocol used, and discussion on the evaluation or conclusions when feasible.

Chapter III provides a brief summary of on-going research and studies on the Forest.

Chapter IV addresses adjustments or corrections to the Forest Plan.

Chapter V is a list of the Forest Service employees that provided information contained in this report.

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II. DISCUSSION OF MONITORING

The following table consists of elements from the Monitoring Matrix, Table MON-4 of the Forest Plan. It identifies the resource element, the monitoring question, drivers, and frequency of measure that are discussed on the pages that follow in this report.

Table 1. Resource areas, monitoring questions drivers, and measure frequency discussed in this report.

Resource	Monitoring Question(s)	Driver (Applicable CFR's, FP Desired Conditions, and FP Objectives)	Measure Frequency
Tribal Rights and Interests	Is Forest management helping to sustain American Indians' way of life, cultural integrity, social cohesion, and economic well being?	D-TR-1. O-TR-1. O-TR-3.	Throughout the year
Tribal Rights and Interests	Are government to government relationships functional?	D-TR-2. O-TR-2. O-TR-4.	Throughout the year
Tribal Rights and Interests	Is the Forest facilitating the right of the Tribes to hunt, fish, and gather as retained via treaty?	D-TR-3.	Throughout the year
Social & Economic Stability	To what extent does output levels and location of timber harvest and mix of saw timber and pulpwood compare to those levels projected?	CFR 219.19.12(k)[1]. A quantitative estimate of performance comparing outputs and services with those projected by the forest plan;. 36CFR 219.7(f).A program of monitoring and evaluation shall be conducted that includes consideration of the effects of National Forest Management on land, resources, and communities adjacent to or near the National Forest being planned and the effects upon National Forest management from activities on nearby lands managed by other Federal or other government agencies or under the jurisdiction of local governments. D-TM-1, O-TM-1	Annual
All-Outputs	How close are projected outputs and services to actual?	(36 CFR 219.12(k)[1]. A quantitative estimate of performance comparing outputs and services with those projected by the forest plan;	Annual
All-Costs	How close are projected costs with actual costs?	(36 CFR 219.12(k) [3]. Documentation of costs associated with carrying out the planned management prescriptions as compared with costs estimated in the forest plan.	Annual

Off-Highway Vehicles	To what extent is the Forest providing OHV opportunities; what are the effects of OHV's on the physical and social environment; and how effective are forest management practices in managing OHV use?	36 CFR 219.21[g]. Off-road vehicle use shall be planned and implemented to protect land and other resources, promote public safety, and minimize conflicts with other uses of the National Forest System lands. Forest planning shall evaluate the potential effects of vehicle use off roads and, on the basis of the requirements of 36 CFR 295 part of this chapter, classify areas and trails of National Forest System lands as to whether or not off-road vehicle use may be permitted. D-RMV-1, 2. O-RMV-1, 2.	Annual
Transportation	To what extent is the Forest, in coordination with other public road agencies, providing safe, cost effective, minimum necessary road systems for administrative and public use?	D-TS-1,2,3,4. O-TS-1,2,6,7,8.	1-5 years
Wildlife: Management Indicator Species	What are the population trends of management indicator species? Gray Wolf Eagle Goshawk White Pine	36 CFR 219.19(a)(6). Population trends of the management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish and wildlife agencies, to the extent practicable. O-WL-1, O-WL-15, O-WL-16, O-WL-32. O-WL-33.	Annual
Wildlife: Non-native Invasive Species (NNIS)	To what extent is Forest management contributing or responding to populations of terrestrial or aquatic non-native species that threaten native ecosystems?	D-WL-9; O-WL-38, 39, G-WL-39.	1-5 years
Vegetation Composition and Structure	To what extent is Forest management, natural disturbances, and subsequent recovery changing vegetation composition and structure? To what extent are conditions moving toward short-term (1-20) and long-term (100 years) objectives at Landscape Ecosystem, Management Area, and other appropriate landscape scales?	D-VG-1, -2,-3, -4	1-5 years
Timber	Are harvested lands adequately restocked after five years?	(36 CFR 219.12(k)[5][i]. Lands are adequately restocked as specified in the forest plan	Annual
Insects & Disease	Are insects and diseases populations compatible with objectives for restoring or maintaining healthy	(36 CFR 219.12(k)[5][iv]. Destructive insects and disease organisms do not increase to potentially	Annual

	forest conditions?	damaging levels following management activities. D-ID-3, O-ID-1, D-VG-5, D-VG-8, O-VG-11-13	
Fire	How, where, and to what extent will prescribed fire be used to maintain desired fuel levels, and/or mimic natural processes, and/or maintain/improve vegetation conditions, and/or restore natural processes and functions to ecosystems?	D-ID-4-5, O-ID-2-4	1-5 years
Soils	Are the effects of Forest management, including prescriptions, resulting in significant changes to productivity of the land?	36 CFR 219.12 (k) [2], Documentation of the measured prescriptions and effects, including significant changes in productivity of the land; D-WS-3, D-WS-12, O-WS-9, O-WS-10	1-5 years
All	Monitoring and evaluation requirements will provide a basis for a periodic determination of the effects of management practices. 36 CFR 219.11(d) At intervals established in the plan, implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. Based upon this evaluation, the interdisciplinary team shall recommend to the Forest Supervisor such changes in management direction, revision, or amendments to the forest plan as are deemed necessary. (36 CFR 219.12(k))	Monitoring Regulatory Requirement, Table MON-1, Forest Plan, p 4-3. (Includes BMP monitoring)	
Lands Adjustment	How successful is the Forest's land adjustment program in support and enhancement of Forest Plan desired conditions and objectives and contributing to efficient and effective stewardship?	D-LA-1, 2; O-LA-2 and 3.	2 years
Minerals	Are mineral exploration, development, and production avoidance or mitigation measures effective and being followed as recommended in project designs?	D-MN-1 and 2.	1-5 years
Special Uses	Does Forest management of forest product, recreation/wilderness, and other special use permits meet Forest Plan and agency direction?	D-REC-5; O-SU-1, 2, 3, 4, 5. D-TS-5.	1-5 years
Air Quality	To what extent is Forest management contributing or responding to air quality effects on ecosystems, human health or human enjoyment?	D-AQ-1,2; D-WS-4, 5; D-REC-3, D-SC-1 AND O-AQ-1.	1-5 years

1. Tribal Rights and Interests

Monitoring Questions:

- Is Forest management helping to sustain American Indians' way of life, cultural integrity, social cohesion, and economic well being?
- Are government to government relationships functional?
- Is the Forest facilitating the right of the Tribe to hunt, fish, and gather as retained via treaty?

Monitoring Driver:

D-TR-1 Lands within the Forest serve to help sustain American Indians way of life, cultural integrity, social cohesion, and economic well-being.

D-TR-2 The Forest Service continues to work within the context of a respectful government-to-government relationship with Tribes, especially in areas of treaty interest, rights, traditional and cultural resources, and ecosystem integrity. The Forests provide opportunities for traditional American Indian land uses and resources.

D-TR-3 The Chippewa National Forest facilitates the exercise of the right to hunt, fish, and gather as retained by Ojibwe whose homelands were subject to treaty in 1855 (10 Stat. 1165). Ongoing opportunities for such use and constraints necessary for resource protection are reviewed and determined in consultation with the Leech Lake Band of Ojibwe.

O-TR-1 Improve relationships with American Indian tribes in order to understand and incorporate tribal cultural resources, values, needs, interests, and expectations in forest management and develop and maintain cooperative partnership projects where there are shared goals.

O-TR-2 Maintain a consistent and mutually acceptable approach to government-to-government consultation that provides for effective Tribal participation and facilitates the integration of tribal interests and concerns into the decision-making process.

O-TR-3 The Forest Service will work with the appropriate tribal governments to clarify questions regarding the use and protection of miscellaneous forest products with the objective of planning for and allowing the continued free personal use of these products by band members within the sustainable limits of the resources.

O-TR-4 Consult, as provided for by law, with Tribes in order to address tribal issues of interest and National Forest management activities and site-specific proposals.

Background:

Government to Government consultation is continuous between the Chippewa National Forest and Leech Lake Band of Ojibwe, who were signatory to the Treaty of 1855. Approximately 44% of Chippewa National Forest lands lie within the Leech Lake Indian Reservation, and the Band

has reservation lands within the boundary of Chippewa National Forest along with rights reserved by treaty throughout the Forest.

The Forest Plan management direction generally assures the availability of resources to support the continued exercise of treaty rights and cultural practices and not impair access to such resources and places of traditional practices. Specific availability of resources and access considerations may be determined through government-to-government consultation with the objective of maintaining sufficient availability of resources for the continued harvest or utilization needed to satisfy tribal needs.

The basis for government-to-government consultation and cooperation has been established by previous actions by LLBO and the Forest Service. In 2007, a part-time Tribal Liaison position was established in cooperation with the Leech Lake Band of Ojibwe. The Chippewa Liaison continued to function in a part-time capacity in 2009. The National Forest and the Band worked together cooperatively under formal agreements and informally toward achieving 2008-2009 tribal relations goals. These goals emphasize outreach and recruitment, partnership building, developing mutual cultural awareness, and initiating development of a Memorandum of Understanding. Consultation is not isolated to the Forest Supervisor or Tribal Liaison and occurs broadly at all levels of both governments.

During FY-2009 the Chippewa National Forest continued cooperative efforts with the Leech Lake Band in developing a Section 106 Programmatic Agreement. The Forest Supervisor and Tribal Liaison each maintained frequent contacts with Leech Lake elected leaders and Program Directors through formal face-face meetings, correspondence and e-mails.

Monitoring Activities:

Efforts are underway to track activities and commitments made that contribute towards the tribe's way of life, cultural awareness, or economic well being. In addition, we have tried to identify and track the consultation activities and cooperative activities that occur between the Band and the Forest as they relate to the 4 strategic goals.

CULTURAL AWARENESS

In May, a Diversity Day was hosted by the Leech Lake Band, including speakers on workplace culture and overcoming barriers in the workplace. Chippewa Tribal Liaison, Neil Peterson presented at the session.

CONSULTATION/COMMUNICATION

In June 2009 Chippewa Tribal Liaison participated in Tribal Consultation training offered by the Chequamegon-Nicolet National Forest offered in Rhinelander, Wisconsin. The session was instructed by a Forest Service retiree and former Northwest Region, Tribal Relations Specialist. In June 2009 the Tribal Liaison, Forest Supervisor and Tribal Liaison met with the LLBO Tribal Council to provide an update on FS activities underway and planned that promote gov – gov relationships between the Chippewa National Forest and the Band. The Regional Forester presented an engraved axe to the Tribal Council in recognition of the Bands efforts to work cooperatively with the Chippewa in promoting gov-gov relationships. Additional coordination

meetings occurred throughout the year including the LLBO Director of Division of Resource Management and Executive Directors for LLBO.

The Tribal Liaison has been meeting with Gina Lemon, Tribal Historic Preservation Officer at least quarterly to assess progress on the Section 106 programmatic agreement. In addition to discussing the agreement, the THPO has brought other issues forward for research and forest responses that the Tribal Liaison has facilitated.

The Tribal Liaison accompanied Rangers and Planning Teams in consultation and project planning meetings involving the LLBO Division of Resource Management.

EMPLOYMENT/OUTREACH

On two separate occasions the Tribal Liaison made presentations to LLBO job club participants with the intent of informing participants about Forest Service careers and application procedures.

For at least the last six years Chippewa National Forest employees have participated in the Leech Lake band of Ojibwe annual career fair. The Chippewa N.F. is also represented at the annual Leech Lake Tribal College and White Earth Band of Ojibwe career fairs. Tribal Liaison visited the Fond du Lac Tribal College in October to present career information to students.

In FY 09 the Chippewa recruited 12 Native Americans (2 though YCC) through seasonal hiring authorities. One Native American SCEP student was converted on the Deer River ranger District.

The Forest hosted three STEM program students from the Leech Lake Tribal College for a period of 10-12 weeks. Two students were mentored by a Public Affairs Specialist. The third was hosted on a District and mentored as a Forest Technician.

The Forest hosted two participants of the Native Employment Works (NEW) program. Funded by the U.S. Dept. of Health and Human Services, Administration for Children & Families, the NEW program provides culturally appropriate services to all Minnesota Chippewa Tribe members in the service area who receive Minnesota Family Investment Program funds (MFIP) and are not served by the bands. The Forests contribution was to provide employment and training to tribal MFIP recipients to increase independence from the Welfare system.

The Forest hosted 19 Native American volunteers in various projects in FY 2009.

Since 2009, a challenge cost share agreement allows the Chippewa National Forest and LLBO to work together over five years on needed maintenance and operations of approximately 45 water impoundments within the Chippewa National Forest.

In FY 2009 there were several contracts and agreements with Native American businesses and cooperators. The Forest awarded 15 contracts to Native American/American Indian owned companies that totaled \$230,281.69.

In 2009, the Chippewa National Forest executed \$741,743.31 in agreements. Of this amount, \$533,911.41 (72%) was for Native American Owned cooperators. A large portion of this money was for the LLBO Steven's Fund hazardous fuels reduction project (\$300,000).

Also, in FY09 the EROC awarded the firefighter proposal to the LLBO. Total dollar amount of that project is \$111,000.00

PARTNERSHIPS

Summer Rabideau Worker Investment Act program completed 8 week program doing conservation projects (Lady Slipper transplant project), basic construction/painting on-site at Rabideau, excavation of original stone sign, developed youth food production project and built natural fence greenhouse, planted more than 100 container gardens and garden vegetables in cooperation with the U of M Extension Service and others. Funded in part by Blandin, Northwest Minnesota Foundation, Initiative Foundation and Leech Lake Band of Ojibwe.

Chippewa National Forest efforts with the Leech Lake Band of Ojibwe dump site agreement received funding late in the year. The funding will go towards illegal dump site cleanup, cooperative Law Enforcement and education.

We have expanded our outreach efforts to work with multiple program areas if the Leech Lake Band of Ojibwe. Several partnerships targeted toward the Band have been consummated through agreements that include, Day Labor Program, Minnesota Family Investment Program, Worker Investment Act. The Forest continues to work with the Cass Lake/Bena High School STAR Program in promoting conservation education and career awareness to the 10th graders.

In April the Tribal Liaison participated in a Human Resource Management networking meeting that included representatives from multiple Minnesota Ojibwe Bands.

RESOURCE MANAGEMENT

Contacts with Division of Resource Management and Local Indian Councils (15 exist):

- to discuss project planning and current project implementation efforts and identify concerns, and
- to identify any historic sites or traditional uses within the project areas.

The project leaders met with LICs with regard to the following projects: Upper East Winnie, Boy River 2, Continental Divide, and Non-native Invasive Plant (NNIP) Management projects. Except for the NNIP project, these are the larger projects completed in FY 2009. In addition there were 1-2 meetings per project with THPO and DRM.

Discussion via phone with THPO and the DRM Wildlife Biologist occurred after publication of each NEPA Quarterly (published quarterly) or Schedule of Proposed Actions. This publication lists all the ongoing and upcoming projects on the forest. This has been an effective way to identify any concerns and to assess the need for further discussion, information, or meetings--particularly on smaller projects.

Continental Divide Resource Management project is located on the Blackduck district and is in a tribal high interest area. District personnel met with Local Indian Councils (LICs) at least five times and met with DRM. Most of the project area is outside the Leech Lake Reservation. The Band appealed the decision on a number of issues. The appeal was reviewed by the Regional Office. The issues raised were deemed to be adequately assessed in the project analysis and disclosed. The District Ranger's decision was affirmed.

Upper East Winnie Vegetation Management Project is located on the Deer River District. The majority of the project area is in tribal high interest area. District personnel met with interested LICs on 8 different occasions. Acres were dropped and treatments for some stands were modified based on input provided.

Boy River 2 Vegetation Management Project is on the Walker District. Treatments in some stands in close proximity to Kego Lake and Smokey Point were deferred in this project.



The *Boy River prescribed burn* is one of several safely executed burns. This fire-dependant wet meadow has had one rotation of fire to each part of its ecosystem, which provides habitat for Yellow Rail and other wetland species. Partners include Cass County, two regions of MN DNR, private owners, the Leech Lake Band, and the Forest Service.

Stewardship projects

“Little Pinky” Stewardship project between Blackduck District & LLBO was awarded in August 2007. The project will use funds generated from a timber harvest to reforest 7 permanent openings in 2008 (14 ac). The site preparation for the opening planting is about 2/3 complete. Timber harvest is scheduled to begin in 2009. This contract was designed to build relationships between the LLBO and the CNF.

Lydick Stewardship project was approved August 2007. Regeneration of jack pine will promote undergrowth such as blueberry, a traditional use plant important to the LLBO. The contract is intended to restore traditional plants and improve relations with regard to trust responsibilities. Contract award is anticipated in 2010.

Evaluation and Conclusions:

During FY 2009, a wide variety of cooperative activities and consultation efforts have been implemented. Work on a Memorandum of Understanding is still in progress. Each of these items helps establish mutual measures and expectations in support of resource management, opportunities for partnering to accomplish Forest Plan objectives, and strengthen government--to--government relations. Further recommendations include:

- Continue steps to draft Memorandum of Understand with the LLBO to help guide working relationships and define a more consistent manner for working together. Focus will be on OHV and tree stand use.
- Develop participating agreement with the Leech Lake Tribal College, that provides Science, Technology, Engineering and Math (STEM) program participant's greater exposure and practical training in the Forest Service.
- Continue consultation with the LLBO and Forest Staff Specialists on the status of the Section 106 Programmatic Agreement with the goals of obtaining a signed agreement in FY 10.
- Continue efforts that facilitate greater involvement of all Tribal members in FS programs and activities afforded the general public.
- Continue connecting key leaders from both governments to help address key issues that may have potential to disrupt relations. Continue to develop relationships and partnerships with LLBO.

2. Social & Economic Stability

Monitoring Question:

To what extent does output levels and location of timber harvest and mix of sawtimber and pulpwood compare to those levels projects?

Monitoring Driver:

D-TM-1 The amount of commercial timber sales available for purchase is at a level that is sustainable over time. Mill operation in northern Minnesota can depend on a consistent level of timber harvest on the National Forest.

O-TM-1 Provide commercial wood for mills in northern Minnesota. Harvested material supplies sawmill, veneer mills, paper mills and mills constructing engineered wood products (hardboard, particleboard, oriented strandboard, etc.). The Forest provides posts, poles and logs for log home construction.

Background:

This information was compiled from actual sales that were offered during Fiscal Year (FY) 2009 and is a reflection of the forest's ability to satisfy local demand for wood products.

Monitoring Activities:

Types of information monitored include the amount of volume offered, amount of volume harvested, amount of uncut volume under contract, and the number of acres offered. The volume offered is further broken down into sawtimber and pulpwood. The amount of volume offered is negotiated with the regional office each year and is more a reflection of the budget than the capability of the land. Information provided below is from the FY 2009 Annual Bid Monitoring Report and the Timber Cut and Sold Report (Timber Sale Statements of Account (TSA)).

Evaluation and Conclusions:

Table 2. Timber Target, Volume Offered & Sold, Volume Harvested, and Uncut Volume under contract, and acres offered by FY

	FY 2009	FY 2008	FY 2007	FY 2006	FY 2005
Timber Target	37,110 MBF	37,095 MBF	37,163 MBF	28,900 MBF	27,000 MBF
Volume Offered & sold ¹	35,414 MBF	35,497 MBF	37,557 MBF	28,929 MBF	27,184 MBF
Volume Harvested	25.6 MMBF	19.6 MMBF	21.4 MMBF	20.6 MMBF	26.8 MMBF
Uncut volume under contract	94.5 MMBF	84.7 MMBF	68.8 MMBF	53.1 MMBF	43.2 MMBF
Acres offered	3379	4654	5500	3523	3868

¹ FY 2005 target was for volume offered; FY 2006-2009 target was for volume sold.

The target assigned in FY 2009 remained essentially the same, 37,110 MBF compared to 37,095 MBF in FY 2008. The actual volume offered and sold also remained essentially the same 35,414

MBF in FY 2009 compared to 35,497 MBF in FY 2008. The forest was on track to increase the volume sold and meet its target, however one sale offered in September had no bids and did not sell. This sale was offered again in FY 2010.

Uncut volume and volume harvested increased in FY 2009. Uncut volume under contract increased in FY 2009 for a fifth year in a row. Volume harvested levels increased by approximately 30% in FY 2009 from the amount harvested in FY 2008 but is still below what has traditionally been harvested (27-33 MMBF) in the years prior to 2006.

In FY 2009 markets for housing materials, oriented strandboard (OSB) and lumber, continued to be depressed due to the slump in the housing market. Mills continued with periodic temporary shutdowns and prices paid for delivered material were less than what loggers had paid for stumpage. Because of poor economic conditions, many contracts were offered contract term adjustments which added additional time to the length of the contract. With the increased forest commitment to increase our sell, the volume offered has been greater than the volume cut for the past five years which has made the volume under contract increase.

Competition for the Chippewa National Forest timber volume was steady with one less bidder than in 2008. There were 20 bidders during FY 2009 compared to 21 in FY 2008. On average, there were 3.1 bidders per sale, which compared to 3.7 bidders last fiscal year. The number of bidders per sale ranged from one to six. All but one sale sold. The number of bidders was a reflection of sale location and species mix. Sales with a high pine component and sales with good access had the largest number of bidders. The one sale that did not sell was thought to be priced too high for the quality of the wood and proximity to markets.

Table 3. Ratio of sawtimber to pulpwood volume sold.

	Decade 1 (Proposed)	Actual Ratio FY 2005	Actual Ratio FY 2006	Actual Ratio FY 2007	Actual Ratio FY 2008	Actual Ratio FY 2009
Sawtimber:Pulpwood	32:68	15:85	18:82	21:79	19:81	6:94

As shown above, the ratio of sawtimber to pulpwood is quite a bit lower than what was predicted in the Plan. In 2009 there was more aspen/hardwood sold. Aspen is always sold as pulpwood and the hardwood stands were treated to remove the smaller sized timber which is pulpwood. Much of the sawtimber material is found in softwood sales which constituted a smaller than normal portion of the program.

In FY2009, prices bid for timber decreased for the third year with sawtimber prices of most species dropping by 42% and the prices paid for pulpwood dropping by 18% compared with FY 2008. This resulted in a 30% decrease in average bid prices for all species/products combined to \$44.42 per MBF.

A comparison of the actual revenues generated to the estimated revenues from timber harvest is displayed in the table below. The estimated revenues are taken from Forest Plan Revision, Volume II Appendices, Table BEIS-7, pg B-11.

Table 4. Actual versus Estimated Revenues from Timber Production in FY 2009.

Species	Product	1996-1998 Avg. Price/MBF Expected Revenue	FY 2009 Avg. Price/MBF	Percent Difference
Aspen	Pulpwood	59.30	44.48	- (25)
Mixed Hardwood	Pulpwood	28.13	23.93	- (15)
Mixed Hardwood	Sawtimber	54.12	37.05	- (32)
Balsam Fir	Pulpwood	61.96	54.77	- (12)
Spruce	Pulpwood	64.38	43.96	- (32)
Spruce	Sawtimber	75.41	70.77	- (6)
Pine	Pulpwood	28.50	59.52	+53
Jack Pine	Sawtimber	127.13	97.97	- (23)
Red/White Pine	Sawtimber	238.63	109.22	- (54)

Overall revenues in FY 2009 were lower than those generated in FY 2008. They are also lower than those estimated in the FEIS analysis. The exception is mixed pine pulpwood. Much of the decline in prices was due to slowing demand for OSB, which can utilize many of the species listed. Also the demand for raw paper has declined which has affected the aspen and hardwood markets. Some pine pulpwood can be sawn for lumber and that market has not declined locally as much as the OSB market.

The bid ratio (advertised value/bid value) for FY 2009 increased to 79%. This reflects the tight market conditions and there is less room for increases in bids due to lower profit margins.

Acres Harvested

Acres harvested include projects planned and sold prior to completion of the 2004 Forest Plan Revision but harvested after the Forest Plan went into effect. The Chippewa National Forest *harvested* timber on a total of 3615 acres in FY 2009. These numbers are obtained from our corporate database (FACTS) and are reported when harvest in a stand is complete. The Table below compares the acres harvested by treatment method to the acres Proposed for Decade 1 (Table APP-D2: Forest Plan, D-3, Estimate of Acres of timber harvest by treatment method (Forest-wide)). Table APP-D2 was changed as part of an administrative correction on September 14, 2007 to increase the acres and percentage of thinning treatments and to reduce the acres and percentage of uneven-aged treatment in red pine, white pine, spruce fir, northern hardwood, oak and black ash in Decade 1. Total acres treated is unchanged.

Table 5. Summary comparison of harvested acres by treatment method to Proposed Decade 1.

Treatment Method	Decade 1 (Proposed) Corrected 9/07		Total (FY 2005-2009)	
	Acres	Percent	Acres	Percent*
Thinning	16000	21	7539	50
Clearcutting	29866	39	3997	26
Shelterwood/ Partial Cut 30	11149	14	2176	14
Uneven-aged (all types)	20124	26	1495	10
Totals	77139	100	15207	100

*Percent: percent of acres harvested (thinning: (7539/15207))*100

Table 6. Harvested acres by treatment method by FY.

Treatment Method	Actual Accompl (FY 2009)		Actual Accompl (FY 2008)		Actual Accompl (FY 2007)		Actual Accompl (FY 2006)		Actual Accompl (FY 2005)	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Thinning	1754	48	803	37	1439	51	1371	53	2172	54
Clearcutting	829	23	728	33	709	25	782	31	949	24
Shelterwood/ Partial Cut 30	428	12	469	22	495	17	295	11	489	12
Uneven-aged (all types)	604	17	182	8	198	7	124	5	387	10
Totals	3615	100	2182	100	2841	100	2572	100	3997	100

The above table shows the breakdown by FY for 2005-2009. Comparing the percentages on an annual basis helps to recognize the trends in harvest treatments as they are tracked over time. It appears we are over accomplishing commercial thinning and under accomplishing clearcut and uneven-aged acres. The percentage of shelterwood and partial harvest harvested is comparable to that proposed in the Plan. There are several factors that influence the outcomes.

- As pointed out in the previous section, there is 94.5 MMBF currently under contract that has not been harvested. The distribution of treatments that comprise the uncut volume under contract has not been analyzed. As units under contract are harvested, the outcomes may shift.
- Pine has been in higher demand recently than aspen/hardwood. Sales with pine stands, many of them thinning units, are being harvested before the mixed hardwood stands. The economic climate the last couple of years has prompted the Forest to prepare and sell pine thinning units.
- Our highest priority landscape ecosystems (LE) for treatment tend to be the Dry Mesic Pine and Dry Mesic Pine-Oak LEs. These are the LEs that are most out of sync ecologically and have the highest fire hazards. Red pine is a significant component on these LEs and has been a focus for treatment. Given that many of these stands are 30-80 years old, commercial thinning is commonly prescribed. In addition, when the plan was modeled, the assumption was that thinning acres would be entered once during the 15 year life of the plan. In reality, growth rates were higher than anticipated. To maintain a healthy stand or increase growth, stands may need to be thinned more than once in a 15 year cycle.
- Recent planning projects recognize the need to create more acres in the 0-9 age class which would be reflected in the acres of clearcutting or shelterwood treatments (refer to the next section). It may take up to 5 years, or more, for acres that are planned to be harvested.
- Emphasis has been placed on uneven-aged treatments in hardwood and some conifer stands in recent planning projects. These stands are being offered as part of recent contracts and some loggers have markets, such as firewood, that can utilize the hardwood from these treatments.

- In the last five years due to budget allocations, timber targets are 70% or less of full implementation.

The Decade 1 harvest treatment numbers projected in the Forest Plan and are based on full funding and implementation of the Plan. Mixes of potential harvest treatments is a tool to accomplish Forest Plan objectives but are not an objective in and of themselves. Each environmental analysis (EA) and the set of harvest treatments resulting from that decision are based on meeting the vegetation objectives for the Landscape Ecosystem (LE) in which the project is being implemented. Vegetation objectives, existing conditions, and the need for treatment drive the types of treatments prescribed. An alternative approach of identifying more stands to clearcut, as an example, is generally not used because it may or may not result in achieving the Forest Plan LE objectives. The LEs and objectives vary by project but over the decade meeting the vegetation objectives across a mix of project areas hopefully should yield harvest treatments similar to those projected in the Plan. Nonetheless, it is recognized that some shifts may need to be made in planning and implementation to meet the decadal Forest Plan objectives.

Acres of Harvest Planned

The above discussion focuses on the acres actually *accomplished* or harvested for each fiscal year since FY 2005. The time lag between planning and harvesting exists because it typically takes 1-2 years to do the field work and prepare the timber sales. Length of timber sale contracts vary from 2-5 years so harvesting may occur at anytime within that timeframe.

The following discussion highlights the acres *planned* for harvest by treatment type since the 2004 Forest Plan went into effect. This information was compiled for treatment acres in the decisions signed under the 2004 Forest Plan.

Table 7. Summary of *planned* treatment acres and percent from FY 2005 through FY 2009 compared to decade 1 projections from Forest Plan Administrative Correction 9; Table APP-D2.

Treatment Method	Decade 1 (Proposed)		Project Decisions under 2004 FP FY 2005-2009	
	Acres	Percent	Acres	Percent
Thinning	16,000	21	16,121	37.1
Clearcutting	29,866	39	12,086	27.7
Shelterwood/ Partial Cut 30	11,149	14	7,289	16.7
Uneven-aged (all types)	20,124	26	7,989	18.4
Totals	77,139	100	43,516	100

Each treatment method category includes several similar treatments. For example, the thinning category includes salvage and improvement cuts. Clearcutting includes patch and stand clearcuts as well as coppice cuts. Shelterwood and partial cut 30 category includes seed tree harvests, shelterwood and partial cut treatments. The uneven-aged category is the broadest and includes uneven-aged shelterwood, individual and group selection, and two aged coppice harvests. These grouping are different than displayed in previous monitoring reports. In the past the clearcuts,

seed tree and two aged coppice were all included in the clearcutting category. They were re-grouped based on discussions with the forest silviculturist. Acres are approximations based on GIS data used during the project planning process.

Some of these acres have already been harvested, others are sold but not yet harvested, and still others are yet to be laid out and sold. During implementation some acres may be dropped due to inaccessibility, mitigations for wetlands or other resources.

Information from the above tables shows the acres and percent of a particular treatment with respect to all the treatments proposed. For example, the Forest Plan projected that thinning would occur on approximately 21% of the treatment or harvest acres; whereas thus far it actually comprises 37% of the acres planned for harvest. Looking at the treatments for project decisions made under the 2004 FP, halfway through the decade, note the following trends:

- Thinning acres comprise 37% of the treatments which is considerably higher than the 21% estimated at the end of decade 1.
- Clearcutting accounts for approximately 28% of the treatments which is well below the projected 39% for decade 1.
- Shelterwood and partial cut acres are about 17% of the planned treatments, several percentage points above the 14% expected at the end of decade 1.
- Uneven-aged treatment acres are roughly 18% which at this point is well below with the 26% projected for the end of the decade.
- In general, we are planning fewer even-aged regeneration harvests (clearcut and shelterwood harvests) than projected (44% planned compared to 53% proposed). These treatments create the 0-9 age class on the landscape.
 - Several of our recent projects have been in high interest tribal areas (Upper and Lower Winnie, Lydick, Steamboat, Cuba Hill, and Portage Lake). Due to Native American values and interests, clearcutting in particular is not an accepted practice. Consequently, there are more thinning and uneven-aged management treatments prescribed for high interest tribal areas. The Forest Plan did not recognize or incorporate more conservative prescriptions in tribal high interest areas.
- Conversely, in our projects we are planning more thinning than proposed in the Forest Plan which may warrant a future Forest Plan correction or amendment.
 - As mentioned in the previous section, this is in part a function of the drier LEs we are focusing on, especially on the Deer River District. But there is also recognition that the data for plantations used for the Forest Plan planning process was in many cases 20 years old or older. Recent inventories have indicated that stands have grown much faster than anticipated and require multiple entries to maintain their growth.

Table 8. Percent of Forest Plan proposed treatment acres compared to planned treatment acres in projects.

Treatment Method	Forest Plan Decade 1 (Proposed)	Project Decisions under 2004 FP FY 2005-2009	
	Acres	Acres	Percent
Thinning	16,000	16,121	101
Clearcutting	29,866	12,086	41
Shelterwood/ Partial Cut 30	11,149	7,289	65
Uneven-aged (all types)	20,124	7,989	40
Totals	77,139	43,516	56

The total project acres for each treatment planned during FY 2005-FY 2009 compared to the Forest Plan projected acres at the end of Decade 1 are displayed in the above table. For example, thus far 12,086 acres have been planned for clearcutting in decisions compared to the FP projected 29,866 acres; this is 41 % of the projected clearcutting decadal acres. Approximate percent of decade 1 acres for each treatment planned since August of 2004 is as follows:

- 101% of thinning acres
- 41% of clearcuts acres
- 65% of shelterwood and partial cut 30 acres.
- 40% of uneven-aged harvests

Assuming that each of these treatments should be roughly 50% since we are about halfway through the decade, we are over-accomplishing thinning; exceeding the shelterwood acres; and under-accomplishing the clearcut and uneven-aged treatments.

Table 9. Comparison planned project acres and volumes to Forest Plan numbers.

Forest Plan Decade 1 (Proposed)		Acres planned in Project Decisions under 2004 FP		
		Estimated	Acres	Percent
**Total Acres Harvested 1st 10 years of implementation	77,139	Total Acres Planned for Harvest	43,516	56
***Timber Volume (MMBF) 1st 10 years of implementation	580	Estimated Volume (MMBF)	250	43

** Total acres from Forest Plan Table APP-D2.

***Volume (Allowable Sale Quantity) from Forest Plan pg. D-1.

The table above compares the Forest Plans proposed acres and volume to the total acres in our project decisions.

- roughly 56% of the proposed decadal acres for harvest have been planned.
- about 43% of the proposed decadal timber volume have been planned.

- Comparing the volume output to the acres treated, the average expected volume per acre is 7.5 MBF/ac compared to 5.7 MBF/ac from our planned projects. This may be in part due to fewer even-aged harvests planned than proposed. Even-aged harvests typically remove more volume per acre. We are covering more acres and obtaining less volume than proposed in the Forest Plan.

Tribal interests and rights

The Forest Plan identifies areas of high interest to the Leech Lake Band of Ojibwe (p. 2-37) within the Reservation boundary. These areas were identified by the tribe during Forest Plan revision because of their value or high use by tribal members. Of the 160,516 acres identified as high interest areas, approximately 107,378 acres are suitable for timber. Roughly 23% of the CNF timber suitable lands fall within the high interest areas.

Some tribal members do not support clearcutting. Red pine stands over 100 years old have spiritual values to some tribal members. As a result, clearcutting mature red pine is opposed particularly in the high interest areas. Projects planned in recent years (Portage, Steamboat, Lydick, Lower East Winnie, Upper East Winnie, and Cuba Hill) have been in high interest areas and treatments have been modified to address tribal concerns. Modifications include changing prescriptions from intensive harvest such as clearcutting or seedtree to uneven-aged treatments to dropping stands entirely.

The Forest Plan did not modify or adjust its treatments or outcomes in high interest areas. Consequently, on a project by project basis, harvest acres and volumes are less than projected outcomes in the Forest Plan. The CNF identified 459,313 acres of lands suitable for timber (FEIS, Volume I, p. 3.4-13).

Payment to the Counties

The federal government makes payments to states to cover some of the cost of local government services on tax-exempt National Forest System lands. The states pass those payments on to the counties in which national forests are located. Payments in Lieu of Taxes (PILT) payments are calculated and made by the Department of Interior, Bureau of Land Management. These payments are appropriated annually by Congress based on available funding and formulas that take into account the population in the affected counties, the number of acres of federal land in those counties, and other payments received by the counties based on federal land payments. Payments are also made to states amounting to 25 percent of gross receipts from activities on national forests, such as timber sales, mining, special uses and recreation. Congress passed the Secure Rural Schools and Community Self-Determination Act (SRS) in 2000, which allowed counties to choose a level payment based on the high-three year average of 25 percent payments, or to continue to receive 25 percent of the current year's receipts. In October 2008 the SRS was amended and reauthorized under P.L. 110-343 which allowed the counties to choose a transition payment through fiscal year 2011 or a payment based upon a seven year rolling average of the 25 percent payments. All three counties have elected to receive their payments as shares of the state transition payment through FY 2011 and will be forming Resource Advisory Committees (RACs) to identify proposed projects for the Title II portion of their payments. A Resource Advisory Committee was nominated in 2009 and will begin operations in 2010 to recommend use of these funds to the National Forest.

Table 10. Payments to Counties for 2009.

FY 2009		25% FUND (SRS share of state payment)	Payment in Lieu of Taxes	Grand total
County	Acres	Total \$	Total \$	Total \$
Beltrami	64,722	149,119	116,625	265,744
Cass	290,696	548,886	351,449	900,335
Itasca	311,123	692,596	381,964	1,074,560
Total	666,541	1,390,601	850,038	2,240,639

Table 11 . Summary of total payments to Counties from FY 2006 – FY 2009.

		FY 2009	FY 2008	FY 2007	FY 2006
County	Acres	Total \$	Total \$	Total \$	Total \$
Beltrami	64,722	265,744	\$281,334	\$130,322	\$123,881
Cass	290,696	900,335	\$922,201	\$754,937	\$754,284
Itasca	311,123	1,074,560	\$1,116,367	\$811,411	\$811,197
Total	666,541	2,240,639	\$2,319,902	\$1,696,670	\$1,689,362

3. All-Outputs

Monitoring Requirement:

How close are projected outputs and services to actual?

Monitoring Drivers:

A quantitative estimate of performance comparing outputs and services with those projected by the forest plan; (36 CFR 219.12(k)).

Background:

Information in this section is specific to the estimated amount of an activity or Practice listed on Table APP-D4 in the Forest Plan, Appendix D. Proposed and Probable Practices, Goods Produced, and Other Information.

Table APP-D4 lists forest management activities, other than timber harvest, that are proposed to work toward the desired conditions and objectives during the first 10 years of Plan implementation. Accomplishments are from the Performance Accountability Report (PAR) database. The Social and Economic Stability section presents and discusses information tied to timber harvest.

Table 12. Proposed Practices and accomplishment by FY.

Table APP-D4: Proposed Practices (Forest-wide)		Accomplished*					
Activity or Practice	Estimated Amount for decade 1	Total	FY 2009	FY 2008	FY 2007	FY 2006	FY 2005
Stream Channel Reconstruction	5 to 30 miles	21 miles	5 miles of stream restored or enhanced	5 miles of stream restored or enhanced	4 miles of stream restored or enhanced	2 miles of stream restored or enhanced 0.1 mile of reconstruction	5 miles of stream restored or enhanced
Sensitive Plant Habitat Restoration	20 projects	0	In progress	In progress	0	0	0
Wildlife Habitat Restoration	80 projects	4792	1733 acres terrestrial	650 acres terrestrial	500 acres terrestrial	655 acres terrestrial	1254 acres terrestrial
		234	--	40 structural improvements	35 structural improvements	66 structural improvements	133 structural improvements
		601	40 acres aquatic	102 acres aquatic	0 acres aquatic	60 acres aquatic	399 acres aquatic

New ATV trail designated (maximum amount listed)	90 miles	0	0	0	0	0	0
New Snowmobile trail designated (maximum amount listed)	100 miles	0	0	0	0	0	0
New Water Access Sites (maximum amount listed)	5 sites	0	0	0	0	0	0
Roads Constructed (only OML -1 roads being constructed)	19 miles	0	0	0	0	0	0
Roads decommissioned	200 miles	110	22 miles	12.4; 14.8 miles unauthorized	1.1	14.8; 2.52 miles unauthorized	13.2; 28.9 in FY 2004

*Accomplishments include projects completed using Forest Service and partnership funds combined

Discussed below are areas of accomplishment pertinent to stream channel reconstruction, wildlife habitat restoration, road decommissioning and sensitive plant restoration.

Stream and Wildlife Habitat Restoration Summaries

In FY 2009, the Chippewa’s Wildlife, Fish, and Rare Plants staff accomplished 35 projects totaling over \$625,400. Of these 35 projects, 26 were accomplished with partners, who include natural resource professionals from Tribal and governmental agencies, lake and watershed associations, local schools and universities, and civic organizations. These 26 partnership projects were accomplished by 16 partners who contributed over \$197,500 in goods and services for wildlife, fish, and Naturewatch (interpretative) projects. Together we accomplished:

- 1733 acres of terrestrial habitat improved
- 40 acres of lake/riparian habitat improvements & 5 miles of stream habitat improved restored
- Annual Maintenance and decommissioning of 24 impoundments.
- Over 200 nest platforms, wood duck boxes, and owl boxes placed across the Forest
- Establishment of a new 5 year Challenge Cost Share Agreement with Leech Lake Band of Obijwe that involves the operation and maintenance of Forestwide impoundments
- American Recovery Act Project Planning and Support and
- 7 naturewatch presentations on wildlife, fish, and rare plants which included “Youth Bird Banding Program”, “Fish Art Expo” and “Take a Kid Fishing Events”.

Accomplishment data are stored in the Wildlife, Fish and Rare Plant Management System online database at: WFRP Management System Home - Watershed, Fish, Wildlife, Air & Rare Plants - USDA Forest Service.

Sensitive Plant Habitat Restoration

For sensitive plant restoration the Forest has undertaken several projects in the last few years. Because restoration of plants takes several years to determine success, accomplishments have not yet been identified. One example is the transplanting and monitoring of *Botrychium* (moonworts) that were impacted during the 2002 Enbridge pipeline restoration. Details were included in the FY 2007 M&E Report, pp 78-79.



Showy Lady Slipper

The Forest has developed a unique public-private partnership to mitigate and reduce impacts along 15 miles the Lady Slipper Scenic Highway. The major challenge of the partnership is to ensure that a population of several thousand Showy Lady's Slippers, the state flower of Minnesota, are not irreparably damaged or eliminated during the highway upgrade. The Pennington Orchid bog along this route, is one of the most prolific producers of orchids in the upper Midwest.

Accurate locations of the orchids (through GPS) are used to help design the road to maintain at least some of the colonies. Having precise colony information also allows efficient transplant so that salvage operations can move the orchids to areas that contain a condition

necessary for their survival. Plans were underway to transplant the flowers in 2009.

A contract was awarded in late FY 2009 to survey a 1500 acre area surrounding Barott's Bog on the Blackduck District for ram's-head lady's slipper and other rare plants.

Activities were deferred in several areas identified by the State of Minnesota as Sites of Biodiversity Significance.

Ash seed collection

Ash seed was also collected to prepare for the possible destruction of Minnesota's ash trees from emerald ash borer (EAB). The forest is contributing to a University of Minnesota ash seed collection effort to proactively protect the genetic diversity of ash before arrival of the non-native invasive emerald ash borer. The seed may be stored for 20 years buying time to find a solution to EAB.

American Elm

Although American elm is not a sensitive plant, the *American Elm Restoration* project is in progress. In 2009, 521 elms were planted in three separate locations on the Forest as part of a 6-year project to produce Dutch elm disease resistant elms.

Road decommissioning

Road decommissioning is defined as activities that result in the stabilization and restoration of unneeded roads to a more natural state. In order to meet the decadal objective of decommissioning 200 miles of road, the Forest would need to average approximately 20 miles of decommissioning per year. In FY 2009, 22 miles of road was decommissioned. A total of 110 miles of system roads have been decommissioned since the inception of the Forest Plan. The decommissioning was completed through a mixture of tree plantings, placing rock berms at the entrances, and also through natural revegetation.

Evaluation and Conclusions:

The Wildlife, Fisheries and Rare Plants program on the Chippewa National Forest is implementing projects at a level consistent with that proposed in the Forest Plan for aquatic and terrestrial habitats enhancement and restoration. The program effectively leverages partnership funds to achieve program objectives, conduct surveys and inventories and outreach the public through educational programs.

Recommendations:

The program should continue active partnership outreach and look for further opportunities to restore sensitive plant habitats where necessary. The Fish and Wildlife Program should continue active collaboration with local DNR offices and the Leech Lake Band of Ojibwe Department of Resource Management and update and renew all applicable MOUs and working agreements with State, Federal, Tribal and user group partners.

Funding in other resource areas such as that for Watershed Restoration, Wildlife Habitat and Threatened, Endangered and Sensitive species protection should be directed toward road decommissioning and impoundment maintenance, prescribed burning in critical habitat areas, and operations when removal or closure of system or unauthorized roads meets objectives for those resources.

Thus far the Forest has not done any work to designate any new ATV or snowmobile trails or develop new water access sites.

4. All-Costs

Monitoring Requirement:

How close are projected costs with actual costs?

Monitoring Drivers:

Documentation of costs associated with carrying out the planned management prescriptions as compared with costs estimated in the forest plan (36 CFR 219.12(k) [3]).

Background:

The Forest Plan itself does not use cost estimates and does not propose objectives based on projected costs. It should be noted that during the analysis for alternatives for the Revised Forest Plan, budget constraints were used to estimate total Forest expenditures and applied to the alternatives. These expenditures, however, are not displayed in the FEIS. Details regarding expenditures are contained in the project record (FEIS, B-47). Regardless, a look at the annual budget and the changes from year to year in total may provide some insight into challenges tied to fluctuating budgets. An overview on the budget allocations, agreements, and stewardship contracts is provided.

Evaluation and Conclusions:

Table 13. Budget allocations for the Chippewa National Forest for FY 2005 through FY 2009.

Fiscal Year	Total Budget
2009	\$ 13,297,700
2008	\$ 13,138,941
2007	\$ 12,556,164
2006	\$ 12,780,332
2005	\$ 13,157,000

The overall budget allocation for FY 2009 was the highest it has been since FY 2005 but only slightly higher. Annually there may be significant fluctuations by program area depending on National and Regional emphasis areas. The dollars received do not necessarily align with the identified workload. Although Regional direction has been to fully implement the Forest Plan, we are not funded for full implementation which poses a challenge. Note that the dollar figures in the above table have not been adjusted for inflation.

Not included in the figures above are the American Recovery and Reinvestment Act (ARRA) funds available to the forest in FY 2009. These are briefly discussed in the section below.

2009 Agreements

In 2009, the Forest entered into 51 new agreements and completed 39 modifications of existing agreements bringing the total value of agreements to \$3,136,021.84. Two of the new agreements were issued in support of the American Recovery and Reinvestment Act (ARRA). The total value of the ARRA agreements is \$1,516,652.59. The value of non-ARRA agreements was \$1,619,369.25. Of the combined total value of agreements for 2009, \$769,868.56 was provided by our cooperators as cash, in-kind or non-cash support to the work completed in these partnership agreements.

Many of our partnership agreements in 2009 were with the Leech Lake Band of Ojibwe. The Forest entered into 17 new agreements with the Leech Lake Band of Ojibwe in 2009. The projects encompassed a wide variety of areas. Below are some examples of the types of work accomplished with the LLBO.

In FY 2009, we entered into a job training/development agreement with the Leech Lake Band of Ojibwe Temporary Employment Program. Of the 16 agreements executed with the LLBO in 2009, 7 of them were with the Temporary Employment Program (TEP). The intent of this agreement is to provide job training opportunities to members of the Leech Lake Band in a variety of areas. TEP employees helped conduct an archaeological survey, provided support to the recreation staff in the operation of a winter sports area and conducted trail maintenance work on the Walker Ranger District.

Safety on any project is a key concern. To assist the TEP in the training of their employees, Forest Service staff provided instruction in the proper use of chainsaws. Certified sawyers from the Forest conducted classroom and field training on safe use of a chainsaw. Ten participants in the Temporary Employment Program were provided the training.

The Forest Service and the Leech Lake Band of Ojibwe Division of Resource Management work closely on many different projects affecting NFS and Tribal lands. A large area of concern is the protection of sensitive plant and animal species. To help protect these species, the Forest and the LLBO entered into an agreement to permanently decommission selected roads and restore degraded sites for the benefit of environmentally sensitive species of plants and animals on the Chippewa National Forest and Leech Lake Reservation. This two-year project includes removing existing roadbeds, restoring natural hydrology, and planting native species. The project aims to improve water quality and, in turn, the productivity of wild rice beds and fisheries on Leech Lake, Mud Lake, and Leech Lake River.

Another way in which we are partnering with the Division of Resource Management is in the cooperative management, maintenance, restoration and improvement of a large portion of the wildlife impoundments located throughout the Forest. Both the Forest Service and the LLBO are interested in the management of impoundments because of the waterfowl they produce and the diversity of habitats they provide, as well as the hunting, trapping, ricing and bait harvest opportunities they afford to tribal members and to the general public.

During FY 2009, the Forest, in conjunction with the Leech Lake Band of Ojibwe, applied for Steven's Funding from the Regional Office to conduct hazardous fuels reduction work on Leech Lake Reservation Land. We received \$300,000 from the Region for the LLBO to conduct hazardous fuels reduction work on 578 acres in the Ball Club area. Employees from the LLBO DRM staff will be working over the next two years to accomplish this work by means of mechanical brushing, stand thinning and prescribed fire.

For the third year in a row, the Forest has partnered with the Leech Lake Band of Ojibwe in the clean-up of illegal dumpsites located on National Forest and Leech Lake Reservation lands. This continuous effort is paying off. By cleaning up the dumpsites and providing education to the

public on the benefits of the proper disposal of household garbage our natural resources are thriving. Although there are many other sites that need attention, the improvements made today will benefit everyone tomorrow.

A wide variety of partnership agreements in 2009 included 5 new cooperative fire protection agreements with fire departments, completion of the interpretive displays at the Edge of the Wilderness Discovery Center, working with the Student Conservation Association to bring on Interns to work as summer naturalists at the Cut Foot Sioux Visitor Information Center and the Edge of the Wilderness Discovery Center, and instructing S-212, Wildland Fire Chainsaws at Northwest Technical College in Bemidji.

We also entered into partnership with a new interpretive association - Jefferson National Parks Association. Jefferson National will assist the National Forest in furthering interpretation and management of public lands. This is done by producing and providing visitors with appropriate interpretive or educational materials through sale or free distribution.

One of the ARRA agreements signed in 2009 was with the Leech Lake Band of Ojibwe for the training of a 5-person crew to conduct fire management activities. \$111,000 of ARRA funding was obligated in 2009 to be used for the training of the crew. This crew will be conducting fuels reduction work on the Forest through a variety of methods including but not limited to prescribed fire, mechanical treatment and mastication.

Our second ARRA agreement was with Beltrami County for the reconstruction of Forest Highway 57(Mission Road or County Road 33). The Forest is providing \$1,315,000.00 towards this project. This project will improve the safety of the road for visitors traveling through the forest.

Stewardship Contracts

The general purpose of stewardship contracting is to achieve land management goals for National Forest lands while meeting local and rural community needs. Stewardship contract should be used when it is the most effective tool for accomplishing land management objectives.

The Chippewa National Forest has several on-going stewardship projects:

- The contract for the 'Little Pinky' stewardship project was awarded to the Leech Lake Band of Ojibwe (LLBO) in August, 2007 and will thin the density of two red pine stands and reforest seven permanent openings (14 acres) on the Blackduck district. Service work was completed summer of 2009, harvesting is anticipated to start summer of 2010. This sole source contract was designed to build relationships between the LLBO and the Forest Service as well as to accomplish resource work.
- The contract for the Juvenile Aspen Stewardship project was awarded in July 2007 to harvest young aspen and restore structural and compositional diversity to a 276 acre area on the Deer River district. Some harvesting may occur in 2010. Service work will begin after harvesting. This was a competitively bid contract.

- The contract for the Nellie stewardship project was awarded to Cass County in September 2006 to harvest a variety of timber stands on the Walker district. Work included demolishing buildings from the former Cedar Spring Resort and restoring the resort site as a day use picnic area for public use. Service work and timber harvesting is complete. There is minor finishing work to complete, it is anticipated that this contract will be complete summer of 2010. This was a sole source contract between Cass County and the Forest Service designed to build relationships, provide a public recreation area, and accomplish resource work.
- The Northwoods stewardship project was approved in August 2007 and amended April 2008 to decommission roads and reconfigure specific roads into primitive trails. Approximately 15 miles of trail will provide access into the newly designated North Winnie Semi-primitive Non-motorized area. Harvest will consist of red pine thinning and hardwood management. This project was competitively bid and awarded in September of 2009. Work has not begun yet.
- The Lydick Stewardship project was approved in August 2007. This project was approved to harvest and regenerate jack pine as well as treating hazardous fuels in the area. An added benefit from the harvest is the resulting condition suitable for blueberry production, a traditional use plant important to the Leech Lake Band of Ojibwe. This project is also intended to be a sole source agreement between the LLBO and the Forest Service to help restore traditional plants and foster better relations about trust responsibilities. Contract is scheduled to be awarded in 2010.
- The Cuba Stewardship project on the Walker district was approved in October 2008. This project was approved to harvest timber, primarily aspen and hardwoods, scarify and seed the harvested areas with jack pine and decommission roads. This contract is intended to be competitively bid. It is anticipated that this contract would be offered in 2011.
- The Spur Stewardship project on Deer River was approved in March 2009. This project was approved to harvest timber, primarily aspen, and install a vault toilet at the Edge of the Wilderness Discovery Center. It is anticipated this contract would be offered in 2010.
- Two new Stewardship Contracting proposals will be submitted for approval during 2010.

5. OHV

Monitoring Question:

To what extent is the Forest providing OHV opportunities, what are the effects of OHVs on the physical and social environment; and how effective are forest management practices in managing OHV use?

Monitoring Driver:

The Forest Service OHV management is predicated on a number of policies, rules, regulations; including those detailed below.

36 CFR 219.21[g]. Off-road vehicle use shall be planned and implemented to protect land and other resources, promote public safety, and minimize conflicts with other uses of the NF system lands. Forest planning shall evaluate the potential effects of vehicle use off roads and on the basis of the requirements of 36 CFR 295 part of this chapter, classify areas and trails of NF system lands as to whether or not off-road vehicle use may be permitted.

D-OHV-1 The forest provides OHV road and trail riding opportunities with experiences in a variety of forest environments, while protecting natural resources.

D-OHV-2 Allowed, restricted, and prohibited OHV uses are clearly defined to the public. Where practical, OHV policies are consistent with adjacent public land management agencies.

O-OHV-1 The Forest will determine which existing OML 1 and OML 2 roads are appropriate or inappropriate for OHV use.

O-OHV-2 A maximum of 90 additional ATV trail miles and 100 snowmobile trail miles with associated trail facilities (trailhead parking, signs, toilets, etc.) may be added to the designated NF trail system.

Background:

This monitoring information will be used to implement the Forest Plan (2004) and the National Travel Management Rule (2006). Travel Management Rule expectations are described below.

Travel Management Rule:

The Travel Management Final Rule (2006) provides expectations for OHV travel access management on the National Forests. The intent of the Rule is to provide regulation of OHVs as a result of the tremendous increases in the number and power of OHVs; widespread environmental and social impacts from unmanaged recreation; while recognizing that motorized recreation is a legitimate use of National Forest system lands in the right places.

2007 CNF Off-Highway Vehicle Road Travel Access Decision:

The OHV Decision resulted in OHV access rules and policy summarized for Operational Maintenance Level roads as follows:

- There is no motorized cross-country travel.

- OML 1 roads are closed to all motorized travel.
- OML 2 roads may be designated for OHV travel and/or highway licensed vehicle travel.
- OML 3 and 4 roads may be designated for OHV travel in conjunction with existing highway licensed vehicle travel.
- OML 5 roads are closed to all OHV travel.

Additional Forest Service system road and OHV access information:

Some roads are currently closed to OHVs and/or highway licensed vehicle use for a variety of reasons. Reasons for closures include Forest Service policy, natural resource concerns and social issues described as follows:

- **OML 1 Forest Service System Roads:** OML 1 roads, the lowest standard of developed roads, are considered by policy (FSH 7709.58) to be closed to all vehicle traffic. These roads are not maintained for any vehicle use.
- **Right of Way:** Some FS system roads cross private lands. On some of these roads FS jurisdiction may not be fully verified.
- **Previously Designated Closures:** Prior decisions involving past management projects that the CNF has done may have closed and/or decommissioned roads.
- **Resource Protection:** Resource protection includes recognition of wetlands; sensitive resource conditions; or soil erosion conditions. Some roads have been closed that could accommodate OHV use given resource conditions. Many of these roads would require significant realignment, re-routing, reconstruction, ditching, and other major improvements to meet guidelines established for road maintenance and user safety or to protect other resources.
- **Forest Plan Management Area or Recreational Facility Protection:** Some roads have been closed as part of Forest Plan direction or have regulatory issues within or directly adjacent to semi-primitive non-motorized management areas, research natural areas, and unique areas as identified within the Forest Plan, hunter walking trails and the North Country National Scenic Trail.
- **Threatened, Endangered, Sensitive Species:** Habitat of a variety of threatened, endangered, or sensitive species has been inventoried and roads that affect this habitat have been designated as closed in accordance with the species recommendation in the CNF Forest Plan.
- Roads that travel through sensitive soil types on the CNF will be closed to motorized vehicles over 1,000 pounds to protect natural resources and the road infrastructure.
- Roads that travel through threatened, endangered, or sensitive species habitat areas requiring limited access will be closed during times specified within the Forest Plan to that species.
- All roads will be closed to OHV use from March 15 to May 1 to improve enforceability and provide protection of the road bed.
- Road number identification signs will correlate with identification numbers on the Motor Vehicle Use map.

The following table indicates baseline conditions as identified in the 2007 OHV Environmental Assessment for the Chippewa National Forest. The table displays the miles of road open and closed to OHV use by road operational maintenance level.

Table 14. 2007 Baseline: Miles of Forest Service System Roads Open or Closed to OHV Use

OML Road	Road Miles Open to OHV Use	Road Miles Closed to OHV Use
OML 1	0	377
OML 2	1,214*	477
OML 3	107	76
OML 4	165	81
OML 5	0	27
Total	1,486	1,038

* 110 miles of roads are closed seasonally for threatened, endangered or sensitive species habitat protection.

Motor Vehicle Use Map:

The CNF Motor Vehicle Use Map (MVUM) identifies those roads and trails designated for motor vehicle use, including OHVs. The MVUM is the legal reference for roads open for OHV use on the Chippewa NF. The first edition of the CNF MVUM was distributed in 2009 with over 6,500 maps given to forest visitors.

Law Enforcement:

There are two law enforcement officers and 21 forest protection officers on the CNF. Enforcement of forest orders and other appropriate 36 CFR regulations occurs as needed on the Forest. For many years, including 2009, there has also been a Cooperative Law Enforcement agreement with Cass and Itasca Counties that provides for a county deputy to work a certain number of days per year that are concentrated on National Forest land.

Law enforcement personal, (including Forest Service, State, Counties, Local and Tribal officers), monitor and respond to activities and behavior on the National Forest and adjoining lands. The primary intent of law enforcement contacts this year continues to be education with an emphasis issuing violation notices for illegal riding. Following is a table indicating criminal OHV offenses by year as recorded in the Law Enforcement Annual Report (LEIMARS records).

Table 15. Summary of Law Enforcement Reports Related to OHVs 2007 - 2009

Incident	2007	2008	2009
OHV	105	127	221

Designated ATV Trail:

The Soo Line Motorized Trail is currently the only designated OHV trail on the Chippewa National Forest. It is approximately 20 miles in length and designated for OHV use during the summer, and snowmobiling in the winter.

Monitoring Activities:

The 2004 Chippewa National Forest Land and Resource Management Plan (Volume I, Section 3.8.3), identified the following indicators to be used in measuring the OHV resources. The indicators will be monitored over time to measure change from the baseline conditions set in 2007 with the OHV Environmental Assessment and decision.

- Indicator #1 – New Motorized Trails for Summer Use

- Indicator #3 – System Roads Open for OHV Use
- Indicator #4 – OHV and Snowmobile Cross-Country Travel Opportunities
- Indicator #5 – Consistency Among Public Land Agencies

Evaluation and Conclusions:

The Chippewa National Forest continues to monitor potential change in the management of OHV in the context of the Forest Plan over time. Decisions made by District Ranger’s based on analysis in environmental assessments, and minor editorial correction to the Wheeled Motor Vehicle Use Map, are the main drivers for change in the quantity of roads open to OHV use. There have been no new motorized trails designated for summer use, and cross-country travel remains prohibited. Finally, the State of Minnesota, Beltrami, Cass and Itasca Counties have differing policies regarding OHV use. For a complete discussion on OHV policy, please referred to the 2007 OHV Environmental Assessment. For the purposes of monitoring, there is not consistency between the county, state and federal governments for OHV use. The following table displays the indicators over time.

Table 16. OHV Indicators 2007 – 2009

Indicator	2007	2008	2009
#1 – New Motorized Trails for Summer Use	0.0 Miles	0.0 New Miles	0.0 New Miles
#3 – System Roads Open for OHV Use	1,486 Miles	1,356 Miles	1,351 Miles
#4 – OHV and Snowmobile Cross-Country Travel Opportunities	Prohibited	Prohibited	Prohibited
#5 – Consistency Among Public Land Agencies	No	No	No

Implementation of the goals and objectives of the Forest Plan for the OHV resource in on-going and will continue over time. Key elements of this progression include; public contact, law enforcement, road management, and the development of the Motor Vehicle Use Map.

Monitoring through Public Contacts

Informing the public about OHV policy and more specifically about which system roads are designated open will remain the focal point of OHV education. Users continue to call and walk-in at forest offices to inquire about which roads are open for OHV travel. The majority of these contacts occur throughout the summer, but peak during the hunting season. To augment the higher level of interest, district staff have been and will continue to make hunter contacts during the hunting season. Having information at forest offices, on the web, and knowledgeable staff is critical to educating the OHV public.

Monitoring through Law Enforcement

Offenses are combined for reporting purposes into categories and reported in the Eastern Region-Northwest Zone Law Enforcement Annual Report. OHV offenses may be included in 1) occupancy and use offenses and 2) travel management restrictions on and off road offense categories. The trend from 2007 to 2009 has reflected an increase in the number of reported OHV

incidents. Fluctuations in incidents can be accounted for a change in directed priorities of the law enforcement officers and a change in the numbers of forest protection officers. Qualitative information from Forest Service employees reflects no decrease in the illegal use of OHVs on the Forest over the past years.

The Law Enforcement Agenda and Action Plan, CNF FY2009 discusses continuing to assist Forest manager with the implementation of the travel management decision through public education, review and revision of Forest Supervisor's orders, design and placement of road closures and postings. The Patrol Captain will coordinate with the CNF to ensure OHV rules are incorporated into widely dispersed documents such as the many different hunting regulation booklets. The Law Enforcement Officers will also assist Districts with the inventory and monitoring of unauthorized roads and trails.

The focus of law enforcement regarding the use of OHVs on the CNF during 2009 has shifted from an education phase to an enforcement mode. Issuing violation notices will occur for individuals that are not legally riding their OHV.

Forest Service System Roads and OHV Use:

In 2009 there were 1,351 miles of Forest Service System Roads that were available to OHV riding. Over the past two years the Forest has installed signs on designated OHV roads that include a forest road number, OHV placard, and mileage of the road. These signs correspond to the MVUM and aid the rider in knowing where they can legally ride. Periodic sign maintenance is needed to replace vandalized signs, or make modifications base on changes to the road system in environmental assessments and annual MVUM updates.

Road closures and decommissioning will continue to be implemented based on decisions resulting from environmental assessments. Road closures can include gates, rock, and berms (earth and debris). These closure devises can be effective, however if there is a designation associated with the closure, for example, a desirable fishing lake, these closures are ineffective. OHV users simply travel through the brush and around the closure. Road decommissioning increased the effectiveness over a closure, as culverts and other road improvements are removed, and typically the first "seen" portion of the road is obliterated, or scarified. This action greatly improves the success of deterring illegal use.

Illegal cross-country use continues to be a significant resource problem that seems to be growing. This use is often associated with illegal permanent hunting stands, recreation riding (getting from point A to B). Forest staff will continue to identify illegal cross-country use and close or decommission these area areas as resources become available to perform the work.

Motor Vehicle Use Map (MVUM)

The motor vehicle use map has been available free to the public since April of 2007. The MVUM is the legal reference and indicates the routes that OHVs may be legally driven on. The intent of the Transportation Rule and the CNF Off-Highway Travel Access Decision is that the system of roads available for OHV use will be monitored each year and adjustments made as appropriate. Public comments combined with CNF staff review of the existing OHV and other motor vehicle use opportunities have resulted in proposals to change motor vehicle access on some roads. These

proposals will be reviewed in 2010 for potential changes to OHV access on CNF system roads and included in the 2011 edition of the MUVUM.

Recommendations:

Management of the OHV resource on the Chippewa National Forest will continue to be a focus area for managers to successfully move toward the desired future conditions in the Forest Plan. Five emphasis areas should be incorporated into work planning for future implementation:

1. Educate users on the Chippewa National Forest OHV rules and regulations.
2. Annually update the MVUM to accurately reflect resource conditions.
3. Increase law enforcement efforts to take action on illegal OHV use.
4. Continue to evaluate the forest transportation system through project level environmental assessments, and implement these decisions (road closures / decommissioning).
5. Actively obliterate unauthorized user created OHV trails.

6. Transportation System

Monitoring Requirement:

To what extent is the Forest, in coordination with other public road agencies, providing safe, cost effective, minimum necessary road systems for administrative and public use?

Monitoring Drivers:

D-TS-1 The existing National Forest System roads that are suitable for passenger vehicles provide a safe and affordable system for administrative and public access to NFS land.

D-TS-2 The National Forest road system is the minimum needed to provide adequate access to both NFS and non-NFS land.

D-TS-3 The transportation system design considers environmental, social, and health concerns.

D-TS-4 The National Forest road system provides a "seamless" interface with the neighboring public road agencies based on coordinated use, function, and agency goals.

O-TS-1 Improve the safety and economy of National Forest System roads and trails.

O-TS-2 Few new OML 3, 4, and 5 roads will be constructed.

O-TS-6 Decisions will be made on Forest unclassified roads to designate them as a National Forest System road or trail or to decommission them.

O-TS-7 Unneeded roads will be decommissioned and closed to motorized vehicles. Roads that are not necessary for long-term resource management are considered "unneeded".

O-TS-8 The Forest will decommission approximately 200 miles of road.

Background:

Each national forest was required to analyze their main road system (the higher standard roads suitable for passenger cars) to determine the minimum road system that will support land management objectives, provide a safe road system for the public, be responsive to the public needs, and be environmentally sound, affordable, and efficient to manage. The National Transportation Policy and Rule (36 CFR 212) requires Forests to:

- To maintain the minimum road transportation system necessary to provide access to the Forest for its management, for recreation and rural access and to use a science-based roads analysis process to determine that minimum system. Permanent roads on the road transportation system are classified Forest system roads.
- To decommission unneeded unclassified roads.
- To secure a sustainable funding source to improve or restore the main roads to establish a "seamless" interface with the other neighboring public road agencies (Public Forest Service Roads Program).

- To maintain a sustainable flow of goods and services while not compromising the health of the land and water (especially integrating the roads analysis with the pending watershed analysis).

The policy and rules place an emphasis on maintaining and reconstructing existing passenger vehicle roads rather than building new ones, and making the existing Forest road system safe, responsive to the public needs, environmentally sound, affordable, and efficient to manage. Road decommissioning is defined as activities that result in the stabilization and restoration of unneeded roads to a more natural state.

Monitoring Activities:

The Chippewa NF maintained nearly 300 miles, and improved 62 miles of FS roads in 2009. Road maintenance consists of road grading, roadside brushing and mowing, and sign replacements. Improvements consist of mainly surface replacement, culvert replacements, and washout repairs. Some roads are no longer needed for access, and 22 miles of those were decommissioned. There were no fatalities reported in 2009.

Coordination with local public road agencies has increased through the use of road maintenance agreements. Agreements now on file allow for Cass County to maintain 46 miles, Itasca County to maintain 55 miles, and Leech Lake Band of Ojibwe to maintain 57 miles of FS roads. These road agreements allow for these road agencies to complete road maintenance on FS roads without cost to the Forest Service, yet provide grading and snowplowing services to the general public.

Another instance of cooperation with Itasca County occurred in 2009, when dust stabilization was needed on a highly traveled FS gravel road. It happened at such a time that Itasca County had an active contract in that area for the same type of work. We were able to add the mileage onto the Itasca County contract, their contractor completed the required work, and the FS reimbursed the county for those costs. This saved time, money, and provided efficient delivery of services to the public.

The Chippewa also works closely with Federal Highway Administration, MN Department of Transportation, and Beltrami, Cass, and Itasca Counties, in coordinating the Forest Highways program. This program provides federal funding to other jurisdiction routes that serve as primary routes across the Forest. This program has infused over \$10 million into the Chippewa's Forest Highway road system in the last 5 years.

Nearly \$2 million dollars in ARRA stimulus funds were shared with MN Department of Transportation, Itasca County, Beltrami County, and Leech Lake Band of Ojibwe in 2009, to improve routes throughout the forest. This work covered sign replacements, culvert replacements, road reconstruction, pavement improvements, brushing and resurfacing of various routes. All of these examples exemplify the benefits of maintaining a road system through cost effective partnerships.

7. Wildlife: Management Indicator Species and Sensitive Species

Monitoring Questions:

What are the population trends of management indicator species?

To what extent is Forest Management contributing to the conservation of sensitive species and moving toward short term (10-15 years) and long-term (100 years) objectives for their habitat conditions.

Monitoring Drivers:

36 CFR 219.19(a)(6). Population trends of the management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish and wildlife agencies, to the extent practicable.

D-WL-3 Aquatic and terrestrial wildlife habitats and species populations, while constantly changing due to both management activities and naturally occurring events, are present in amounts, quality, distributions, and patterns so that NFS land:

- e. Provide for the desired quality and quantity of habitat for management indicator species and indicator habitats.

O-WL-1 Populations: Provide ecological conditions to sustain viable populations of native and desired non-native species and to achieve objectives for management indicator species and management indicator habitats.

O-WL-15 Promote the conservation and recovery of the bald eagle. Population goal minimum: 150 occupied breeding territories.

O-WL-16 Promote the conservation and recovery of the gray wolf. Population goal minimum: contribution to state-wide goal of 1250-1400.

O-WL-17 Maintain, protect, or improve habitat for all sensitive species.

Meeting this objective will involve two basic and complementary strategies that would be implemented based on species' habitat requirements and distribution, individual site conditions, expected management impacts, and other multiple use objectives. These strategies include:

- a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales including, but not limited to: Landscape Ecosystem or Landtype scales for vegetation and management indicator habitat objectives; watersheds for aquatic and riparian condition objectives; and Management Areas for desired or acceptable levels of human uses.
- b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

O-WL-32 Provide habitat to provide for population goal minimum: 20-30 breeding pairs (Northern goshawk).

O-WL-33 Increase amount of white pine to amounts more representative of native plant communities by planting or naturally regenerating white pine trees in white pine forest types and in other upland deciduous, mixed, and conifer forest types. This objective matches white pine objectives shown in the Landscape Ecosystems Objectives section.

Management Indicator Species

Background:

This resource area monitors and evaluates population trends of designated Management Indicator Species (MIS). Management Indicator Habitats (MIH) were also identified for the Chippewa National Forest and along with MIS will be used to analyze the potential effects of management practices on wildlife habitats and populations. The monitoring and evaluation of MIHs began in 2006.

MIS are defined as species monitored over time to assess the effects of management activities on their populations and the populations of other species with similar habitat requirements (Forest Service Manual 2620.5). The rationale underlying the MIS concept is that by managing for and conserving the habitats in which MIS occur, other species that depend on these habitats would also be provided for. The Chippewa National Forest (CNF) has identified four MIS: gray wolf, bald eagle, northern goshawk and white pine. All four of these are species of high public interest, address major management issues, and can be practically monitored. Finally, the CNF and the other National Forests in the western Great Lakes region play a major role in contributing to the overall conservation of these species.

Gray wolf was selected as a management indicator species because:

- it was listed as a federally threatened species at the time of FP revision;
- the potential for impacts from National Forest management to affect its habitat, and existing opportunities to enhance wolf recovery efforts (FSM 2621.1); and
- the potential for management activities and human access/development to affect changes in wolf populations, prey habitat, and related prey species (deer, moose, and beaver).

Bald eagle was selected as a management indicator species because:

- it was listed as a federally threatened species at the time of FP revision;
- the potential for impacts from National Forest management to affect its habitat, and opportunities to enhance recovery efforts (FSM 2621.1);
- changes in eagle populations and habitat can indicate effects of management on other species requiring mature riparian forest; and
- it addresses major management issues related to riparian forests, large old trees and watershed health.

Northern goshawk was selected as a management indicator species because:

- population changes may indicate effects of management;

- it is a Region 9 Regional Forester's sensitive species;
- its habitat associations are well-documented in literature;
- it can function as an umbrella species – (its large area requirements and use of multiple habitats encompass habitat requirements of many other species); and
- its breeding productivity and population and habitat trends can be monitored at site and landscape level.

White pine is a high profile tree species in the forests of northern Minnesota and was selected as a management indicator species because:

- population changes are believed to indicate effects of forest management;
- it is a species with many social, economic and ecological values.
- it addresses major management issues about how much and where to promote white pine for its important wildlife habitat features, timber value, scenic quality and role in maintaining ecologically healthy forest composition and structure; and
- it is considered to be a keystone species, in that its overall effects on critical ecological processes and biodiversity are greater than would be predicted by its abundance.

The gray wolf and bald eagle were designated as MIS under the 1986 Land Management Plan for the CNF. As MIS, they have been monitored for the past 20 years. The northern goshawk and white pine are new MIS.

Monitoring Activities:

Gray wolf:

The Minnesota Department of Natural Resources (MN DNR) has monitored its statewide wolf population since the late 1970s. These surveys are expected to obtain data on wolf distribution and abundance in Minnesota. In the last 30 years, the survey methods have remained relatively consistent, using several combined sources of data. Previous surveys have taken place at 10-year intervals (1978-79, 1988-89, and 1997-98). However, in anticipation of a federal de-listing proposal in 2004, the survey interval was lowered to 5 years. MN DNR decided to move forward with another comprehensive wolf population and distribution survey conducted during the winter of 2007-08. As with past comprehensive wolf surveys, the Forest is contributing observation information to this survey.

The MN DNR mails out instructions, data forms, and maps to cooperating natural resource agencies and consultants including: MN DNR, USDA Forest Service, US Fish and Wildlife Service, USDA Wildlife Services, US Geological Survey, Tribal and Treaty Resource Authorities, County Land Departments, Camp Ripley, Voyageurs National Park and forest products industries and consultants. Cooperating participants are asked to record a location and group size estimate for all wolf sign (visual, track, scat) observed during the course of their normal work duties from October 2007 through April 2008. The MN DNR then uses this information, along with other wolf and deer data, to compute the total wolf range and the total occupied range, as well as estimate the wolf population within the state of Minnesota (MN DNR, 2005). The MN DNR maintains and stores the data collected.

Bald eagle:

The Chippewa National Forest has been monitoring bald eagle populations within its proclamation boundary for over 30 years. Nesting activities are monitored by air. All known eagle nests within the CNF proclamation boundary are mapped and visited by fixed-wing airplane twice during the nesting season. An April activity flight is made to ascertain whether known nest areas are 1) occupied (eagles within the vicinity of a nest), 2) active (eagles on the nest or eggs visible), or 3) inactive (no eagles in the vicinity of the nest). All new nests detected along the flight path are recorded similarly and added to the list of known nest sites. A second productivity flight is made in July to record the number of eagle chicks in or around all previously identified active nest sites.

Nest locations are on an ARCINFO GIS coverage, and activity and productivity data collected from the eagle flights are stored in the FAUNA module of the Forest Service's Natural Resource Information System (NRIS).

Northern goshawk:

Individual known goshawk nest sites occurring on the CNF have been monitored for approximately 11 years in order to determine if the nest structure still exists, the nest site is active, and the pair was successful at fledging young. This monitoring has been and continues to be an important aspect in assessing northern goshawk populations and habitat conditions on the CNF, in Minnesota and in the western Great Lakes region. The methodology of monitoring nesting activity and productivity at known nest sites consists of conducting specific survey activities at certain times of the season based on goshawk nesting chronology. The detection of nesting goshawks is fairly reliable because this species is highly responsive to conspecific alarm calls during the pre-incubation or courtship stage, when the nesting pair is establishing a nest. The methodology for detecting nesting goshawks has been described in the literature (Kennedy and Stahlecker 1993, Roberson 2001). More recently, Andersen et al. (2003) described the protocol they developed for monitoring goshawk breeding activity. Three types of surveys are conducted during the monitoring season: occupancy surveys, nesting surveys, and nesting success surveys.

- Occupancy surveys are conducted to detect whether goshawks are present within the territory. These surveys occur from early March through mid-April. They may include a combination of nest observation and broadcasting goshawk alarm calls at various distances within a 500m radius of all known nest sites within a particular breeding territory. Some follow-up occupancy surveys may occur in June.
- Nesting surveys are conducted for those breeding territories in which goshawk activity was detected during the occupancy surveys. The nesting surveys are conducted in late April or May during the incubation period. They consist of quietly entering an area where there is some reason to suspect activity, but where nesting activity had not been confirmed. The primary objective of this survey is to confirm nesting so that a territory can be classified as "Active".
- Nesting success surveys consist of quietly entering the nest area and searching for chicks within all previously identified active nest sites. These surveys occur in June

and July during the fledging period, in order to determine the final reproductive outcome at that nest. The area within 100 meters of the active nest is searched for chicks to determine whether the breeding outcome was a success or failure.

These surveys have been conducted by CNF and MN DNR personnel as well as goshawk researchers from the University of Minnesota. Recently, the known goshawk territories on the CNF have been monitored as part of the Northern Goshawk Monitoring Project undertaken by the MN DNR non-game program. This project has been on-going since 2003 and its primary objective is to assess occupancy and productivity of known goshawk territories in northern Minnesota. This productivity data is stored, maintained, and shared with other agencies by MN DNR.

Nest locations are on an ARCINFO GIS coverage, and activity and productivity data are stored in the FAUNA module of the Forest Service's Natural Resource Information System (NRIS).

Evaluation and Conclusions:

Gray wolf:

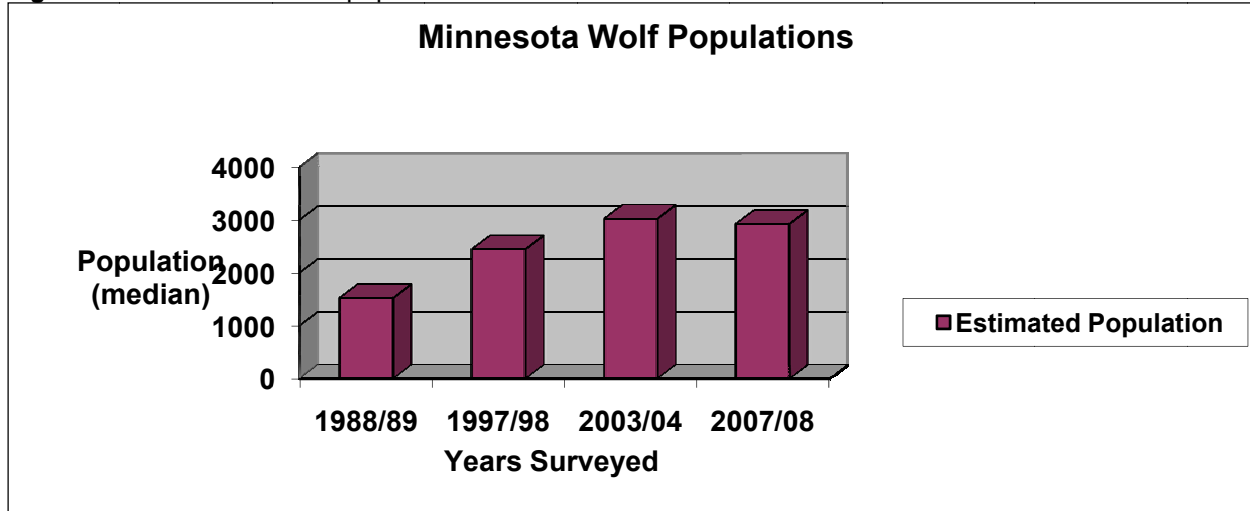
Wolf populations in the western Great Lakes have exceeded federal recovery goals for numerous years. This information led to actions to remove the species from the federal list of threatened and endangered species, and in February 2007, the western Great Lakes gray wolf population, which includes Minnesota, was de-listed. However, in September 2008, a Federal Court vacated the final rule and remanded the decision by the USFWS to de-list the gray wolf. This ruling to once again list the gray wolf as a threatened species under Endangered Species Act on the Chippewa NF did not impact the NFWF or other Chippewa programs in FY2009.

In recent years, there has been a gradual, long-term increase in the number of wolves in Minnesota. Although the Chippewa National Forest was not considered to be critical habitat for the wolf, it plays an important role in maintaining and sustaining wolf populations above the recovery goals due to a considerable amount of suitable habitat for the species and its prey. For the first time since consistent surveys were initiated in the late 1970s, total wolf range in Minnesota did not increase, and estimated occupied range declined only slightly. The 2007/08 population size estimate (2,921 wolves) is slightly smaller than in 2003/04; however, confidence intervals for the last two population estimates are largely widely overlapping. The MN DNR concludes that there has been no significant change in the distribution or abundance of wolves in Minnesota since 1997. In 1997-98, the survey estimated 2,445 wolves ranging over roughly 34,000 square miles of the state. This current wolf population estimate far exceeds the recovery plan goal of 1250-1400 wolves in Minnesota, as well as the MN DNR wolf plan's minimum population goal of 1,600 wolves to ensure the long-term survival of the wolf in Minnesota.

Currently there are no requirements by the USFWS for the MDNR and Chippewa NF to complete annual wolf surveys. The MDNR, however, completes wolf abundance surveys Statewide every 4-5 years to monitor the status. Distribution and abundance surveys of wolves in Minnesota will be once again completed by the MDNR in 2011/12.

Details of wolf survey methods, results and discussions can be found in the MN DNR report entitled “Distribution and Abundance of Wolves In Minnesota, 2007-08” authored by Erb and Benson.

Figure 7.1. Minnesota Wolf populations.



Bald eagle:

Bald eagle nest monitoring in Fiscal Year 2009 included site visits at multiple times of the year, activity flights in April and May, and productivity flights in July. An emphasis for 2009 eagle monitoring was to resolve the status of many nests that have not been relocated over many years. Monitoring results will not appear as whole or complete than in some past years because of this emphasis. Four eagle nests were dismissed from Forest records as never having existed. Five records were retired from Forest records, reflecting that the nest tree no longer is standing. Thirty-one new nests were detected. Four territories were found occupied but no active nests were detected. Seven nests were found to be remnants. Twenty-five nests were found to be gone, but the tree was still standing. Thirty-eight nests were determined to be inactive in 2009. Thirty-six nests were sought but not found. Seventy nests were found to be active. Of these 70 nests: 3 were determined to have produced zero chicks; 23 produced one chick; 13 produced two chicks; 1 produced three chicks; and 30 were found to be active, but no determination of productivity was possible.

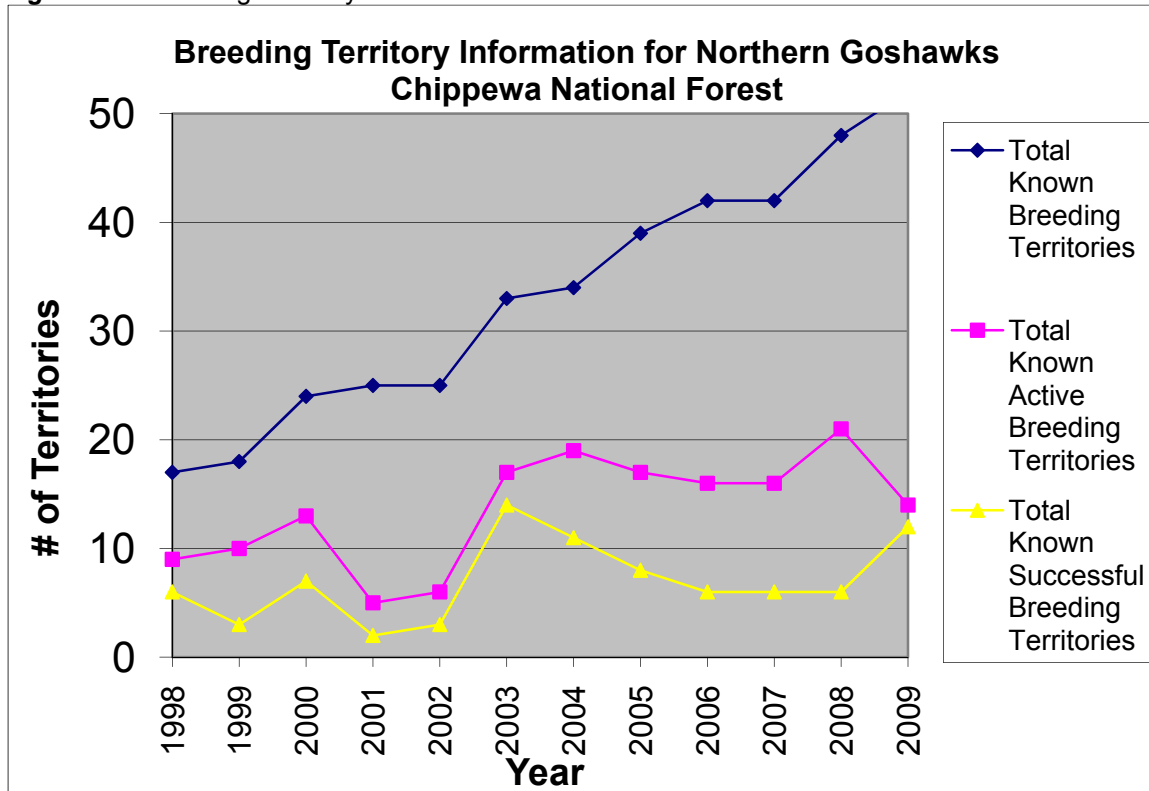
Detection flights were also completed in December 2009 (FY2010). The intents of these flights were to detect nests that have not been located in many years; correct location errors for known eagle nest records; and to seek new nests. Flights over multiple days attempted to visit as many as possible of the 574 eagle nest records still listed in our databases. Processing of this data is ongoing. So far, all known data for 123 of the 574 nests have been compiled and compared to flight findings. Additionally, as many as 21 new nests may have been located from these flights. Final data review, compilation, and reporting is planned for completion by September 20, 2010.

Northern goshawk:

Over the past 13 years, the number of known goshawk breeding territories has risen steadily on the CNF, from 9 known in 1996 to 55 known in 2009. This is generally believed to be a result of

increased search efforts which resulted in more goshawk territories being discovered since 1996. These territories are not permanent and the number of active nests changes year to year. Many of the nests found earlier are now inactive or gone. The number of known active breeding territories and the number of successful breeding pairs has increased, from 7 active breeding territories in 1997 to 14 in 2009 and 5 successful breeding pairs to 12 over the same time period. In 2009, survey efforts showed the 12 successful breeding pairs producing 15 young. The graph below provides breeding territory information over the past ten years.

Figure 7.2 Breeding Territory information for Northern Goshawk.



The population dynamics of the goshawk in northern Minnesota are not clearly understood at this time. No population trends are available for the Western Great Lakes population of northern goshawks or for the portion of the population that falls within the Chippewa NF. The data provided is primarily based upon goshawk territories discovered during on-going field operations on the CNF. Therefore, there may be some bias in how territories are found, the habitats they are found in and the results of their subsequent monitoring efforts. To more completely understand any long term monitoring data, there needs to be some level of randomized inventory of suitable nesting/breeding habitats.

The CNF Forest Plan includes an objective of sustaining 20-30 breeding pairs of northern goshawks. Based upon current direction in the Forest Plan, the number of breeding pairs and suitable habitat conditions are expected to increase over time with implementation of the Forest Plan. Future monitoring at both the nest site and landscape scales will confirm this expectation.

Regional Foresters Sensitive Species (RFSS)

Background:

There are 48 sensitive fish, wildlife and plant species that are known to occur on the CNF. Surveys are conducted for those species known to be present, have suitable habitat and are at moderate/high risk of occurring within project areas proposed for vegetation activities.

Monitoring Activities:

In FY2009, the Chippewa NF Monitoring and Survey Team (MIST) screened a total of 17,124 acres (1002 stands) on the Forest for RFSS habitat and survey needs, of which, a total of 14,687 acres (745 stands) was surveyed for various projects across the Forest. In addition, a contract was awarded in late FY 2009 to survey Barott’s Bog on the Blackduck District for ram’s-head lady’s slipper.

Habitat screening was completed for northern goshawk (and surrounding proximate habitat); red-shouldered hawk (and surrounding proximate habitat); great gray owl; black-throated blue warbler; bay-breasted warbler; Connecticut warbler; 4-toed salamanders; and plants (21 species). Surveys were prescribed only if suitable habitat was present *AND* the stand was planned for a high-risk activity.

Summary of Surveys Completed by RFSS Species/Category in 2009

Table 17. Survey summaries by species.

RFSS Species/Category	Total Acres	Total Stands
Northern Goshawk	*15,928	1099
Red Shouldered Hawk	*3,496	218
Great Gray Owl	996	78
Forest Songbirds	2,081	87
Plants (May Surveys)	1,849	125
Plants (June Surveys)	4,157	217
Plants (July Surveys)	906	25
Plants (August/September Surveys)	9,099	476

**Includes proximate stands of suitable habitat

In 2009, a total of 182 new RFSS/TES locations were detected and added to the Forest records. Additionally, 9 records were removed; removals occur on a variety of bases, including the record no longer exists (e.g. a tree supporting an eagle nest falls), the record was faulty (e.g. improperly recorded location; duplicate record), or other reasons.

Table 18. RFSS/TES location changes.

2009 RFSS/TES Changes			
Species	Category	Added	Removed
Northern goshawk	Bird	7	1
LeConte's sparrow	Bird	1	0
Lanceleaf grapefern	Plant	7	0
Goblin fern	Plant	18	0
Blunt-lobed grapefern	Plant	2	0
Pale moonwort	Plant	2	0
Least moonwort	Plant	2	1
Fairy slipper	Plant	2	0
Gray wolf	Mammal	1	0
Black tern	Bird	2	0
Olive-sided flycatcher	Bird	4	0
Yellow rail	Bird	1	0
Ram's-head Lady's-slipper	Plant	3	0
Trumpeter swan	Bird	1	0
Goldie's fern	Plant	3	0
Bald eagle	Bird	31	7
White adder's mouth	Plant	18	0
Bog adder's mouth	Plant	1	0
Connecticut warbler	Bird	5	0
Black-backed woodpecker	Bird	34	0
Clustered bur-reed	Plant	20	0
Canada yew	Plant	16	0

Table 19. Summary of Changes

Summary of 2009 RFSS/TES Changes		
Category	Added	Removed
Bird	86	8
Plant	94	1
Mammal	1	0
Insect	1	0

RFSS Survey Highlights

A number of species experienced significant advancements based on newly verified locations in 2009.

Two orchid species that inhabit lowland conifer stands were notable. The increase of 18 newly reported White adder’s mouth location increased the number of locations on the Forest by over 35%. The very rare bog adder’s mouth was monitored at the location on Walker Ranger District, where it was first located on the Forest in 2008. Additionally, a second location was detected on the Deer River Ranger District; this location was the first detection of the species in Itasca County.

Two RFSS continue to serve as “success stories” for the Forest survey program. Surveys have detected considerably larger numbers of various RFSS plant species than previously known, so it is possible to reconsider the likely risk from Forest activities. Twenty clustered bur-reed locations were detected, which constituted an increase of 19%. What is most notable about clustered bur-reed is that in 2004 there were only 19 known records on the Forest, but at the end

of 2009 there are 125 known records. Four olive-sided flycatcher locations were added in 2009, also despite no longer being an emphasis species. This species has increased from 2 records in 2004 to 41 in 2009.

CNF MIS Team staff joined staff from LLBO DRM to monitor the Forest's lone one-flowered broomrape (*Orobanche uniflora*) location. The 2009 effort succeeded in re-detecting the species and tracking expansion of the species in the vicinity.

Evaluation and Conclusions:

In FY2009, management activities on all projects complied with 2004 Forest Plan direction for sensitive species. Projects either had no impact or were not likely to cause a trend to federal listing or loss of viability on the Chippewa National Forest. The Monitoring and Inventory Survey Team continue to make improvements to the screening process in surveying various RFSS on the Forest. This improved screening process has made the surveys on the Forest that much more effective in detecting locations of RFSS.



8. Wildlife: Non-native Invasive Species (NNIS)

Monitoring Question:

To what extent is Forest management contributing or responding to populations of terrestrial or aquatic non-native species that threaten native ecosystems?

Monitoring Drivers:

D-WL-9 Native plants and animals dominate all terrestrial and aquatic ecosystems, with non-native plants and animals forming, at most, a minor component.

O-WL-38 Reduce the spread of terrestrial or aquatic non-native invasive species that pose a risk to native ecosystems.

O-WL-39 Use Integrated Pest Management to:

- a. Eradicate any populations of new invaders
- b. Contain or eradicate populations of recent invaders (*i.e.*, non-native invasive species that have only recently become established but are not widespread in the planning area)
- c. Limit the spread of widespread, established invaders within the planning area

G-WL-25 During project implementation, reduce the spread of non-native invasive species.

Background:

Invasive species are widely recognized as one of the primary threats to achieving the goals of managing lands for outstanding outdoor recreation opportunities, abundant wildlife, clean water and sustainable harvest of forest products.

The desired condition of native species dominating the landscape is valid and appropriate in that most people would agree that invasive species are a problem and reducing their numbers is desirable. Forest Plan objectives of using integrated pest management to eliminate new invasive species while limiting the spread of widespread invasives are realistic and achievable. At this point the CNF does not have enough of a baseline to establish if progress is being made in achieving these objectives, even in a qualitative way. More data would be needed to paint an accurate picture of the current distribution and abundance of invasive species in order to articulate quantifiable objectives.

A monitoring plan for NNIS has yet to be developed for the Forest. In 2010 the CNF hired a new program manager for botany and invasive plants. Since his arrival, a thorough review of non-native plant species has been conducted and species are being prioritized for management based on invasiveness, ecosystems at risk and probability of success. Various control options for a coordinated weed management plan being produced in cooperation with the Leech Lake Band of Ojibwe Division of Resource Management.

The CNF is currently in the process of analysis of treatments for invasive plants. A Non-native Invasive Plants Management EA is expected to be completed by the end of FY 2010 with a decision notice to follow shortly thereafter.

Monitoring Activities:

Monitoring of invasive species in FY 2009 included monitoring curly leaf pondweed on Dixon Lake and garlic mustard on Stony Point.

Curly Leaf Pondweed

The Dixon Lake Association, a private homeowners group, has been working for the past three years with DNR and the Chippewa National Forest (CNF) to treat curly leaf pondweed in Dixon Lake using herbicides with the objective of curtailing the expansion of the population into connected water bodies. Forest Service involvement was to help with measuring early plant growth after ice-out in spring and after treatment in late summer by sampling the entire lake using a water rake and recording presence and degree of infestation at a series of sample points. Results have been summarized in twice-yearly reports.

Curly-leaf pondweed populations fluctuate from year to year depending on winter conditions. The plant is capable of growing under cool conditions so populations greatly increase in years when lake ice forms late in the fall, when lake ice melts early in the spring, and when snow cover is shallow and short-lived. All these conditions occurred over the winter of 2009-2010 yet a 20% decrease in extent and density of curly leaf pondweed was seen over the winter. This followed an estimated 20% decrease in extent from the previous year (2008).

Garlic Mustard

Efforts have been in place to control the spread of the invasive plant garlic mustard on the Stony Point Area on Leech Lake near Walker since 2002. This project has consisted of annual hand pulling of garlic mustard. Hand pulling has occurred in conjunction with the Leech Lake Band of Ojibwe Division of Resource Management. No systematic, quantitative measurement of the effects of hand pulling on garlic mustard has occurred to date. Anecdotal reports are that modest decreases in extent and percent cover of garlic mustard in the area has occurred as a result hand pulling.

Evaluation and Conclusions:

Two populations of high priority species, curly pondweed and garlic mustard, were identified and control treatments employed to prevent further spread. Although monitoring was confounded by high natural variability of these species, the populations of these species have not exploded over the last few years, as they might have done if left unchecked. Some indications exist that the curly pondweed project has been successful, although several more years of treatment and monitoring will be necessary to gauge the success of this project, and garlic mustard control efforts have resulted in no expansion of the population.

The Chippewa National Forest invested fewer resources than most R9 forests for inventory, monitoring, evaluation, prioritization and management of invasive species in FY09. This is the result of several conditions. The position of invasive species program manager was vacant for the entire fiscal year 2009. The CNF has less successfully competed for budget dollars for invasive species management than other forests have. The CNF has not yet completed an environmental assessment that would allow the Forest to implement the full range of control for invasive species. Efforts to slow the spread of invasive species on the CNF are complicated by

the wide variety of non-native species present in the area, the fragmented nature of land base ownership within the proclamation boundaries, and budget cuts to state and local government natural resource management programs.

The CNF invasive species program has been hampered by minimal efforts to collect data and a failure to systematically record the data collected. Efforts were made to collect data in 2007 for the weed management environmental assessment. These data were entered into the corporate database (Natural Resource Inventory System-NRIS) but the majority of data collected in the past were not recorded and the corporate knowledge of field workers is not being captured in the database. For instance, Monitoring Inventory and Survey Team (MIST) and contractors' work on surveys for timber sales are the primary plant data collection activity on the CNF but only observations of rare plants are being recorded in NRIS, even though significant quantities of invasive plant and invasive earthworm data are being collected. The overall result of this situation is a record of invasive plants that is spotty at best. At worst, the data could skew decisions in favor of focusing on populations that pose minimal threat while ignoring populations of high concern.

Recommendations:

- While numerous local, state, and tribal agencies have a mandate to control invasive species within the CNF boundary, resources are spread very thinly. Cooperation between these entities is essential to effective invasive species management. As a start, the CNF has begun forming a cooperative weed management area (CWMA) aimed at control of garlic mustard on Leech Lake. The CWMA could act as a model for further cooperation with state, local and tribal agencies as well as getting the general public more involved in invasive species management.
- Once the invasive plant management plan and environmental assessment are completed, invasive plant management activities should be expected to increase. The invasive species program will need to build capacity, particularly by identifying new sources of funding to provide for better management of invasive species. While much need remains to inventory the existing populations of invasive species on the CNF, more effort could be made at control efforts. These control efforts should be subject to regular qualitative and quantitative monitoring to ensure that scarce funds are used in a cost effective way.
- A concerted effort to use the corporate database needs to be embraced by the Forest. In addition, opportunities to capitalize on collecting data on NNIS, in conjunction with other survey efforts needs to be employed.
- Monitoring is an essential element of any invasive species management plan. New management programs may often use ineffective methods. Unless monitoring is incorporated in an adaptive management framework scarce resources could be expended without achieving positive results.

9. Vegetation Composition and Structure

Monitoring Questions:

To what extent is Forest management, natural disturbances, and subsequent recovery changing vegetation composition and structure? To what extent are conditions moving toward short-term (1-20 years) and long-term (100 years) objectives at Landscape Ecosystem, Management Area, and other appropriate landscape scales?

Monitoring Drivers:

D-VG-1 Native vegetation communities are diverse, productive, healthy, and resilient.

D-VG-2 Vegetation conditions contribute to ecosystem sustainability and biological diversity. They address current and future generations' needs for and interests in the many aesthetic, spiritual, consumptive, commodity, recreational, and scientific uses and values of forests.

D-VG-3 Vegetation (live and dead) is present in amounts, distributions, and characteristics that are representative of the spectrum of environmental conditions that would have resulted from the natural cycles, processes, and disturbances under which current forest ecosystems and their accompanying biological diversity evolved. The ecosystem composition, structure, and process representation considers time frames, a variety of landscape scales, and current biological and physical environments. Resource conditions exist that minimize undesirable occurrences of non-native invasive species.

D-VG-4 Tree vegetation is present in amounts, distributions, and characteristics that allow contribution to a sustained yield of timber and pulpwood products.

D-VG-5 Vegetation constantly changes through management activities and through naturally occurring disturbances and ecosystem recovery processes such as wind, fire, flooding, insects, disease, and vegetation succession. These fluctuations are within an ecologically and socially acceptable range of variability.

D-VG-6 Vegetation conditions that have been degraded or greatly diminished in quality or extent on the landscape by past land use are restored to conditions more representative of native vegetation communities.

O-VG-1 through 18. (See Forest Plan, pgs. 2-2 and 2-23)

Background:

Landscape Ecosystems (LEs) are the land and vegetation systems that occur naturally on the landscape. LEs are ecological areas derived from a combination of individual or groupings of native plant communities, ecological systems, and Terrestrial Ecological Unit Inventories at the Landtype and Ecological Landtype scales. Each LE is characterized by its dominant vegetation communities and patterns, which are a product of local climate, glacial topography, dominant soils, and natural processes, such as succession, fire, wind, insects, and disease. The LEs of the Chippewa National Forest nest into the Minnesota Drift and Lake Plains Section of the National Ecological Hierarchy.

The 2004 Forest Plan sets Desired Conditions, Goals and Objectives for vegetation at the Forest wide and at the Landscape Ecosystem scale for the eight LEs described on the Forest.

Monitoring Activities:

Changes to 2003 Composition and Age Class

The existing condition described in the Plan for each LE was based on data updated in 2003. Since 2003, changes in composition and age class between stated existing condition in the Plan (2003) and current condition (2009) are the result of a combination of active forest management, ongoing inventory, stand re-delineation and typing which was completed several years ago, and natural aging. Since 2003, the Forest has conducted Common Stand Exam (forest inventory) on over 150,000 acres. The changes resulted in some sizable compositional shifts consisting of reductions in the amount of jack pine, red pine, spruce-fir, aspen, and paper birch and corresponding increases in the amount of northern hardwoods and some white pine. These changes have been detailed in previous M&E reports so will not be discussed further here. They are reflected in the acres and percentages in the tables in this section of the report.

Forest-wide Summary Information

The following tables contain summary data that reflect what *has been accomplished through 2009*. It does not consider planned or unaccomplished activities. The numbers and percentages reflected in the tables represent the 2009 existing conditions based on the best available data derived from the Forest GIS Stands Layer. The numbers and percentages for 2009 can be compared to percentages for the Decade 1 or 10 year objectives (2014). The first part of this section consists of forest-wide composition summary obtained by aggregating the information for each LE. It is followed by summary information on composition and age class for each of the LEs. A forest-wide summary of the age class distribution was not included because each of the LEs has different age class categories. As a result, it was not possible to quickly aggregate the data. We will plan on doing this in a future report.

Forest Species Composition Summary

This information is an aggregate of the LE summary information presented later in this section. It should be emphasized that this information is for forest types (predominate species in a stand). Based on inventory data, the forest type is mathematically calculated without regard to merchantability or management objective and is assigned based on the predominant species for a given variable such as basal area or trees per acre. With that in mind, a stand with a forest type of red pine might have significant components of jack pine, white pine, or hardwood species of which red pine is the majority.

The FP also has objectives to increase species diversity within stands which is not reflected in the analysis below.

Table 20. Forest-wide Vegetation composition Objectives for Uplands in the Minnesota Drift and Lake Plains Section. (Reference: Forest Plan, Table DLP-2, p. 2-57)

Forest Types	2009		10-yr Obj. %	20-yr Obj. %	100-yr Obj. %
	Acres	%			
Jack pine	11,686	2.6	5	6	6
red pine	73,057	16.4	17	17	19
white pine	5,407	1.2	2	3	6
spruce-fir	24,154	5.4	7	8	9
oak	6,931	1.6	2	2	2
Northern hardwoods	77,177	17.3	15	16	17
aspen	215,009	48.3	45	42	32
paper birch	32,073	7.2	8	7	9
TOTAL	445,494	100	100	100	100

This table does not incorporate figures for White Cedar Swamp and Wet Sedge Meadow because they are lowland areas we have done little or no harvest in.

In general, to meet the 10 year objectives, the Forest needs to

- Increase the amount of jack pine, red pine, white pine, spruce-fir, oak and paper birch on the landscape.
- Decrease the amount of northern hardwoods and aspen on the landscape.

More detailed information on trends for forest types by LE is presented in the table below.

Table 21. Need to maintain (m), increase (+), or decrease (-) acres based on comparing 2008 percentages to Decade 1 percentages for each LE (reference tables: Forest Plan pp 2-57 through 2-79).

Forest Type	Landscape Ecosystem						
	Hardwood LEs		Pine LEs			Lowland LEs	
	BHC	MNH	DP	DMP	DMPO	TS	WCS
Uplands							
Jack pine	-	m	+	m	+	m	m
red pine	m	m	-	m	+	-	m
white pine	+	m	m	+	m	+	m
spruce-fir	+	+	m	+	+	+	+
oak	m	m	-	+	m	-	m
Northern hardwoods	-	-	-	-	-	-	+
aspen	-	+	-	-	-	-	-
paper birch	m	+	-	+	m	-	-
ACRES (upland)	99,780	64,872	11,953	82,229	158,285	19,694	
Lowlands							
black spruce	+	+	+	+	+	+	m
tamarack	m	m	-	-	m	-	m
lowland hardwoods	m	-	+	-	m	-	+
white cedar	+	m	m	m	m	m	+
ACRES (lowland)	31,726	6,759	406	7,508	20,204	31,182	12,964

Hardwood LEs: BHC- Boreal Hardwood Conifer MNH – Mesic Northern Hardwood

Pine LEs: DP – Dry Pine DMP – Dry Mesic Pine DMPO – Dry-Mesic Pine/Oak

Lowland LEs: TS – Tamarack Swamp WCS – White Cedar Swamp

General comments for uplands

- Jack pine –Maintain or increase jack pine across the landscape in all LEs except boreal hardwood conifer. In particular, emphasis should be on increasing jack pine in the dry pine and dry mesic pine/oak LEs. Much of the mature, old or older jack pine has been planned for harvest except for the approximately 5300 acres needed during the first 10 years of plan implementation to meet FP standard S-WL-9 (FP, p. 2-32). Retention however will not keep many of these decadent stands from falling apart and converting to brush fields. To increase jack pine will require the conversion of other forest types, most likely red pine or aspen, through harvest, site preparation, and reforestation.
- Red pine –Maintain red pine in the hardwood LEs, but the strategy to achieve the desired objectives will vary depending on the pine LE. It is possible to decrease the amount of red pine in the dry pine LE by converting plantations to another forest type. Based on an analysis of old/older red and white pine (MIH 7) in the FY 2006 M&E Report, it is necessary to maintain or increase the amount of old/older red pine stands in the uplands to meet FP objectives.
- White pine –Increase the acres of white pine forest type in the boreal hardwood conifer and Dry-Mesic Pine LE; maintain the existing amount of white pine in all other LEs. Note that the white pine forest type (white pine is the predominant species) should be distinguished from the overall forest objective of increasing conifer diversity within stands. The latter entails increasing the amount of white pine within stands. There has been considerable effort with planting and seeding of white pine to increase the white pine component in stands which adds to species diversity but may not change the forest type. As with red pine, it is necessary to maintain or increase the amount of old/older red pine stands in the uplands to meet FP objectives for MIH 7.
- Spruce-fir – Increase acres of spruce and balsam fir in all LEs except for the dry pine LE. This is being done by leaving the spruce and fir components in many partial cuts and by planting and seeding these species in regeneration harvests.
- Oak – Except for the dry pine and tamarack swamp LEs, maintain or increase oak to increase the amount and distribution on the landscape. Oak is currently being left in many stands harvested. Thus far, oak stands are rarely treated.
- Northern hardwoods and aspen – There continues to be a surplus of hardwoods and aspen on the landscape in almost all LEs. Recent projects have identified acres to convert, but in the case of aspen this is an expensive and intensive process that takes several years to accomplish and ultimately may not be successful. There are many stands across the forest where the conversion process has been started but is not yet completed. Success is determined at the time of the last regeneration survey which is usually five years after harvest. In the absence of adequate funding, heavy conifer browse by deer, or poor species survival due to drought or disease, attempts to convert a stand may not be successful and aspen may win out.

Many aspen stands have been left to convert through the aging or the succession process. Aspen is a relatively short lived species; it sprouts if disturbed by harvest or fire. If untreated it will die out and other species will take its place. At this time we have no way of tracking the number of acres deferred from harvest that will naturally convert from aspen to another species. Although stands may be deferred in one entry, they may be reconsidered and harvested in the next entry.

- Paper birch is variable depending on the LE.

General comments for lowlands

There has been very little harvest activity in the lowlands in the last decade or more for a couple of reasons. Although the 2004 FP considered and scheduled harvest in lowland sites, there remained a concern by some that lowland conifer stands fail to be adequately regenerated on the forest following harvest. This resulted in a hesitancy to prescribe harvest in black spruce, tamarack, and mixed lowland conifer types. In FY 2005, the majority of harvested lowland stands were surveyed for stocking and analyzed to determine the probability of regeneration success. The analysis indicated that there is a high probability that lowland conifer stands will be regenerated (refer to FY 2006 M&E report, pp 43-45). Aside from that, when dollars are limited to conduct TES surveys, lowland sites which tend to be lower volume sites with higher probability of having TES, are often dropped in favor of the upland sites.

State biodiversity areas may also occur in lowlands. Recently the MN DNR recognized Sites of Biodiversity Significance which were identified as part of the Minnesota County Biological Survey for rare natural features. As a result of these designations, several recent vegetation projects have deferred activities in high biodiversity areas.

In general, to meet the 10 year objectives and desired conditions the following need to occur:

- Black spruce –Increase the acres of black spruce in all lowland LEs. The Plan identifies the need to increase acres of both young and old-growth lowland black spruce forest communities (FP, O-VG-18, p, 2-23).
- Tamarack – Tamarack should either be maintained or decreased depending on the LE. As with black spruce, an increase in acres of young and old tamarack is desired (FP, O-VG-18, p, 2-23). Older tamarack stands are recognized as important habitat for black backed woodpecker. Consequently, there have been limited plans for harvest.
- Lowland hardwoods -- Amount of lowland hardwoods varies by LE. This forest type includes the lowland black ash stands. With the advance of emerald ash borer, ash is at high risk (see Insect and Disease section) and in the future may be lost.
- White cedar –At the time of analysis for the 2004 FP, the existing amount was identified as the desired amount. White cedar is recognized as a component within stands and native vegetation community that should increase (FP, Desired Condition D-VG-6d, p 2-21). The Forest Plan states: “Allow harvest of white cedar trees (in any

forest type) only when re-growth of cedar is likely to be successful or for research purposes (G-TM-4, p. 2-19).

Species Composition and Age Class Distribution by Landscape Ecosystem

Changes to vegetation composition and age class information resulted from inventory data, active management, natural aging, or natural disturbance.

- Clearcutting, seedtree, and some shelterwood harvests completed since 2004 reset stand ages to 0 and add to the 0 – 9 year age class. A harvest such as thinning or individual tree selection does not change the age class or the resulting age class distributions. Because of the lag between planning and accomplishment, it may take five or more years before planned activities are accomplished on the ground.
- All stands other than those with even-aged regeneration harvests have aged since Forest Plan revision (2003 data) and may have grown into an older age class.
- Shifts have occurred from conversions to hardwoods resulting from harvest activities.
- Natural disturbance has not played a role in age class distributions. There has not been a major windstorm or wildfire on the forest since 2000.

Details for each of the LEs follow. The data and numbers provided for 2009 can quickly be compared with those for Decade 1 for each of the LEs and the uplands and lowlands within the LEs. No interpretation or discussion is provided.

BOREAL HARDWOOD CONIFER (BHC)

Table 22. Vegetation Composition for Boreal Hardwood Conifer.

FOREST TYPE	ACRES 2009	% in 2009	Decade 1 2014	Acres to meet Decade 1	Meets, Exceeds, Below	% difference
Jack pine	593	1%	0%	< 500	Exceeds	+1
red pine	3599	4%	4%	3991		
white pine	652	1%	3%	2993	Below	-2
spruce-fir	9097	9%	12%	11,974	Below	-3
oak	42	0%	0%	--		
Northern hardwoods	15693	16%	13%	12,971	Exceeds	+3
aspen	64162	64%	63%	62,861	Exceeds	+1
paper birch	5940	6%	6%	5987		
TOTAL	99780	100%	1% = 998 acres			
black spruce	14698	47%	49%	15,553	Below	-2
tamarack	2707	9%	8%	2536	Exceeds	+1
lowland hardwoods	10480	33%	32%	10,461	Exceeds	+1
white cedar	3841	11%	11%	3487		
TOTAL	31,726	100%	1% = 317 acres			

Figure 9.1 Boreal Hardwood Conifer Age Class Distribution -- Uplands

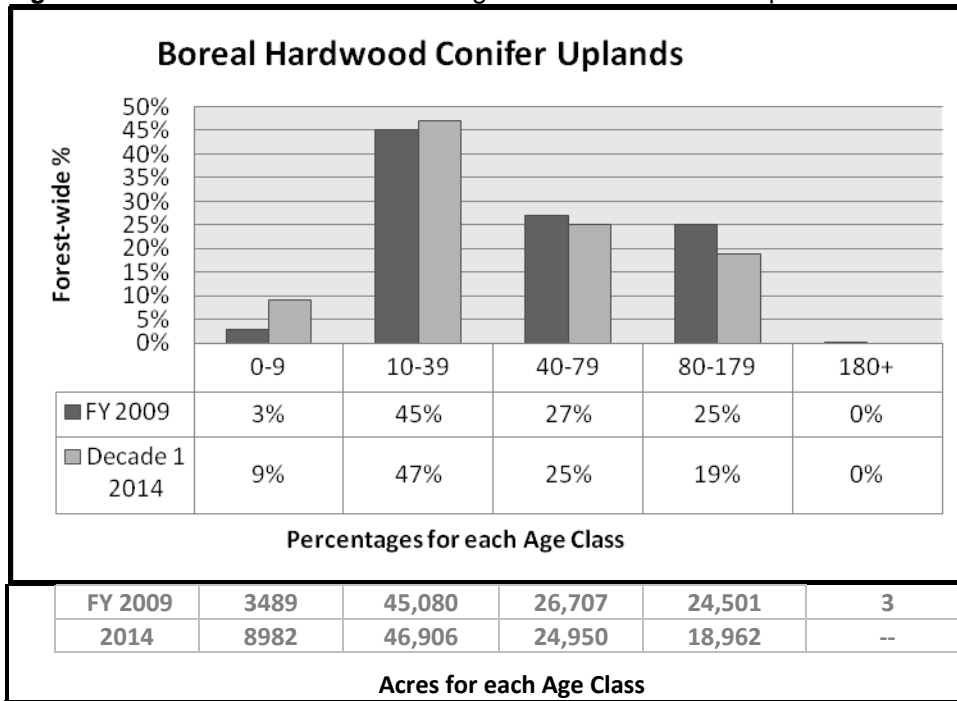
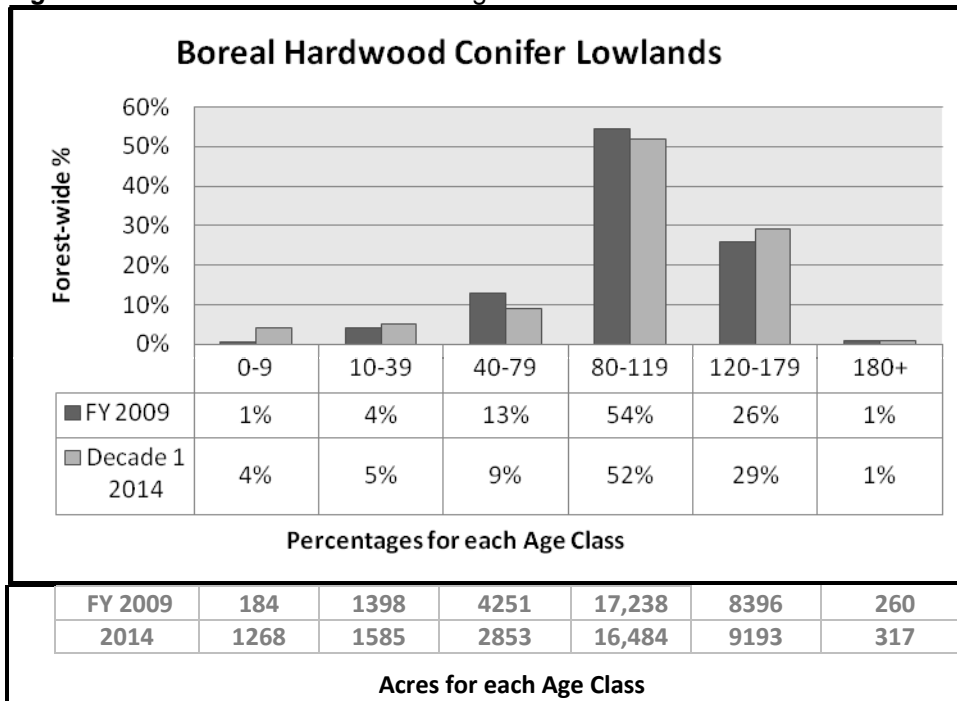


Figure 9.2 Boreal Hardwood Conifer Age Class Distribution -- Lowlands



MESIC NORTHERN HARDWOODS

Table 23. Vegetation Composition for Mesic Northern Hardwoods.

Forest Type	2009 ACRES	% in 2009	Decade 1 2014	Acres to meet Decade 1	Meets, Exceeds, Below	% difference
Jack pine	161	0%	0%	< 325		
red pine	1983	3%	3%	1947		
white pine	432	1%	1%	649		
spruce-fir	3170	5%	6%	3894	Below	-1
oak	634	1%	1%	649		
Northern hardwoods	23672	36%	32%	20,768	Exceeds	+4
aspen	29306	45%	47%	30,503	Below	-2
paper birch	5514	9%	10%	6490	Below	-1
TOTAL	64,872	100%	1% = 649 acres			
black spruce	3089	46%	52%	3536	Below	-6
tamarack	532	8%	8%	544		
lowland hardwoods	2329	34%	31%	2108	Exceeds	+3
white cedar	809	12%	9%	612	Exceeds	+3
TOTAL	6,759	100%	1% = 68 acres			

Figure 9.3 Mesic Northern Hardwoods Age Class Distribution -- Uplands

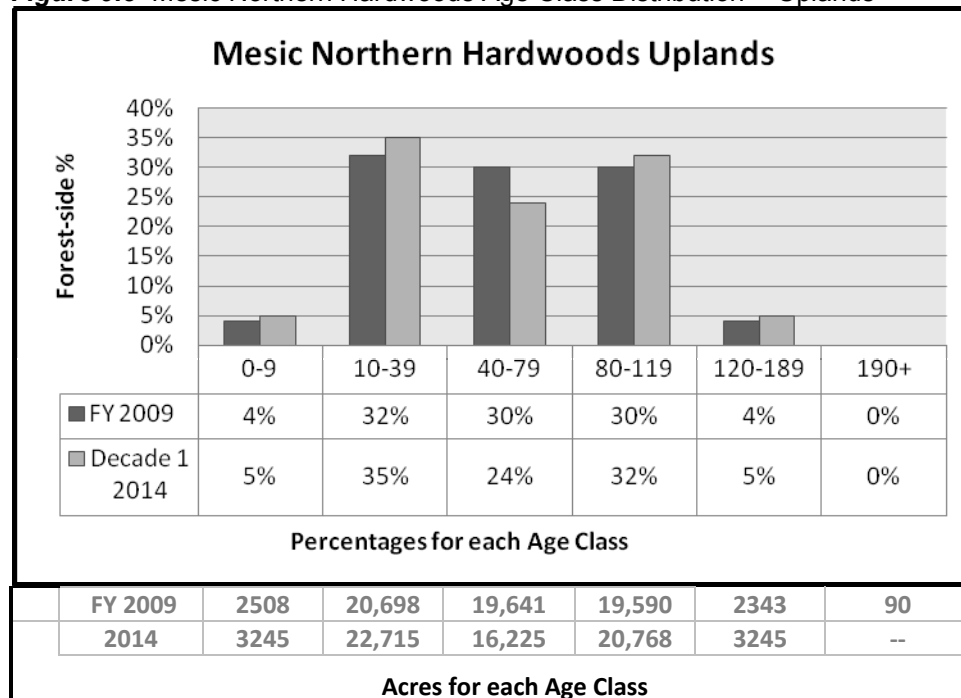
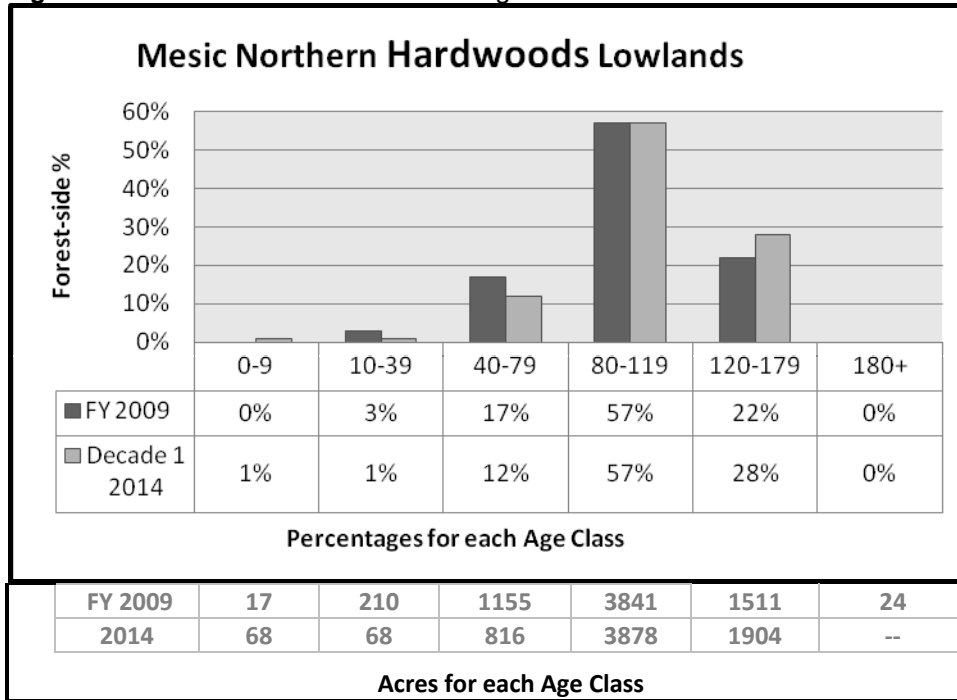


Figure 9.4 Mesic Northern Hardwoods Age Class Distribution -- Lowlands

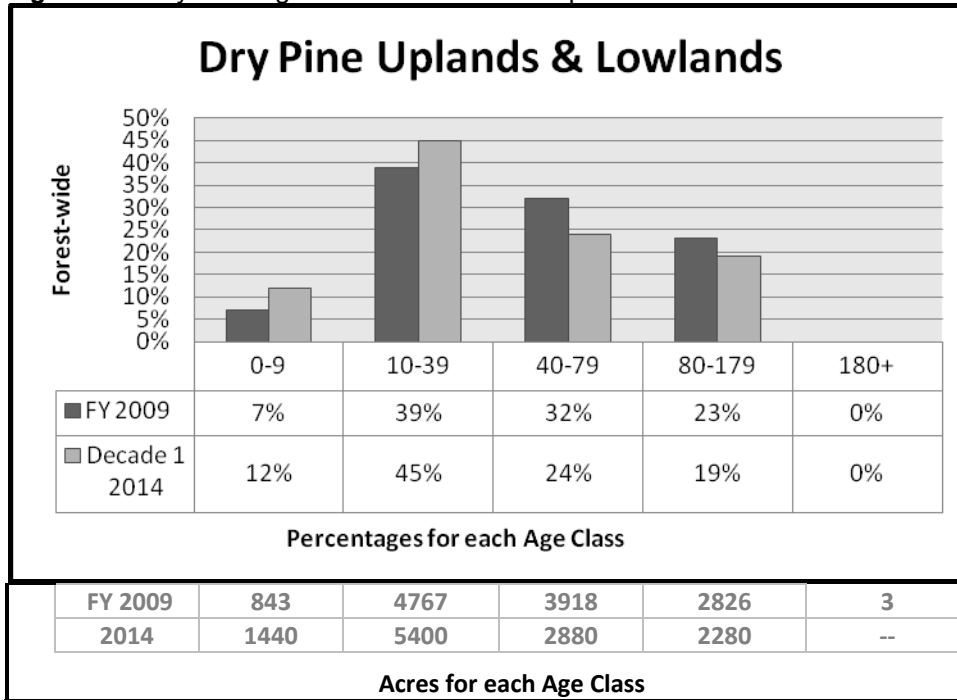


DRY PINE

Table 24. Vegetation Composition for Dry Pine LE.

FOREST TYPE	2009 ACRES	% in 2009	Decade 1 2014	Acres to meet Decade 1	Meets, Exceeds, Below	% difference
Jack pine	2586	22%	35%	4184	Below	-13
red pine	4987	42%	39%	4662	Exceeds	+3
white pine	223	2%	2%	239		
spruce-fir	143	1%	1%	120		
oak	504	4%	3%	359	Exceeds	+1
Northern hardwoods	347	3%	1%	120	Exceeds	+2
aspen	2639	22%	16%	1912	Exceeds	+6
paper birch	524	4%	2%	239	Exceeds	+2
TOTAL	11,953	100%	1% = 120 acres			
black spruce	222	55%	71%	288	Below	-16
tamarack	63	16%	13%	53	Exceeds	+3
lowland hardwoods	38	9%	13%	53	Below	-4
white cedar	83	20%	3%	12	Exceeds	+17
TOTAL	406	100%	1% = 4 acres			

Figure 9.5 Dry Pine Age Class Distribution – Uplands and Lowlands



DRY-MESIC PINE

Table 25. Vegetation Composition for Dry Mesic Pine LE

FOREST TYPE	2009 ACRES	% in 2009	Decade 1 2014	Acres to meet Decade 1	Meets, Exceeds, Below	% difference
Jack pine	761	1%	1%	822		
red pine	12735	15%	15%	12,330		
white pine	1209	1%	4%	3288	Below	-3
spruce-fir	3451	4%	8%	6576	Below	-4
oak	3128	4%	6%	4932	Below	-2
Northern hardwoods	17359	21%	15%	12,330	Exceeds	+6
aspen	36677	45%	41%	33,702	Exceeds	+4
paper birch	6909	8%	10%	8220	Below	-2
TOTAL	82,229	100%		1% = 822		
black spruce	3327	44%	53%	3975	Below	-9
tamarack	720	10%	9%	81	Exceeds	+1
lowland hardwoods	2212	29%	24%	1800	Exceeds	+5
white cedar	1249	17%	13%	975	Exceeds	+4
TOTAL	7,508	100%		1% = 75		

Figure 9.6 Dry-Mesic Pine Age Class Distribution--Uplands

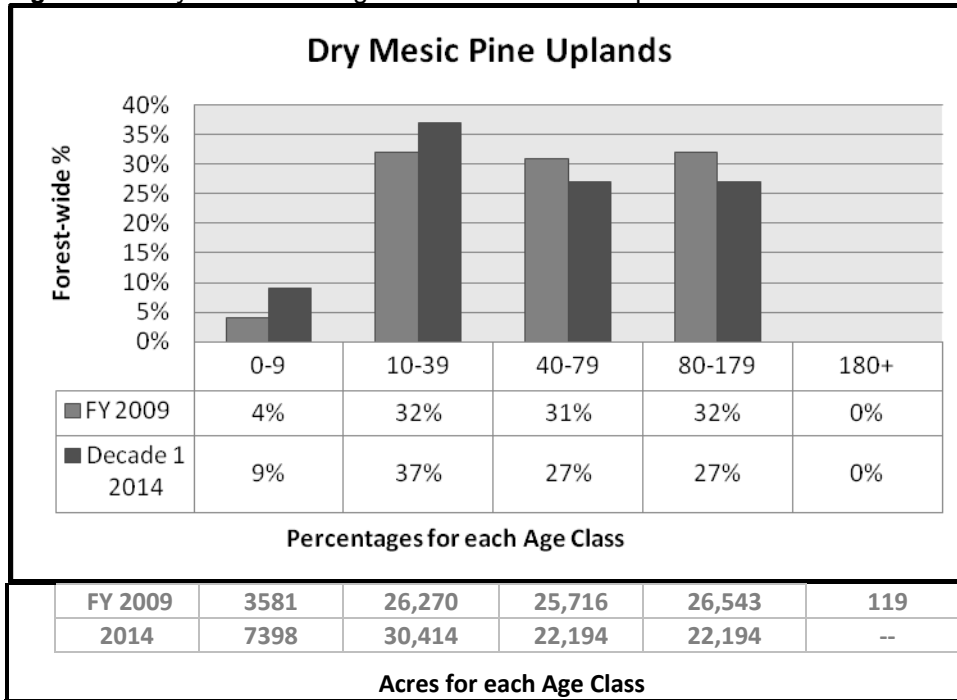
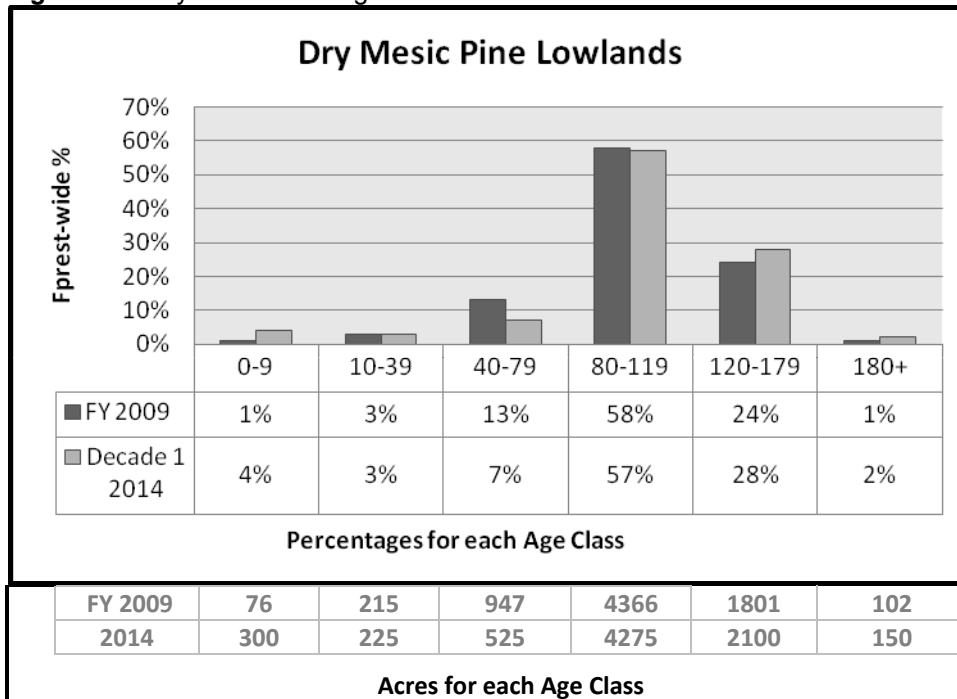


Figure 9.7 Dry-Mesic Pine Age Class Distribution--Lowlands



DRY-MESIC PINE/OAK

Table 26. Vegetation Composition for Dry Mesic Pine/Oak LE

FOREST TYPE	2009 ACRES	% in 2009	Decade 1 2014	Acres to meet Decade 1	Meets, Exceeds, Below	% difference
Jack pine	7348	5%	9%	14,247	Below	-4
red pine	48036	30%	31%	49,073	Below	-1
white pine	2793	2%	2%	3166		
spruce-fir	5962	4%	5%	7915	Below	-1
oak	2473	2%	2%	3166		
Northern hardwoods	17017	11%	10%	15,830	Exceeds	+1
aspen	62886	40%	34%	53,822	Exceeds	+6
paper birch	11770	7%	7%	11,081		
TOTAL	158,285	100%	% = 1583			
black spruce	9998	49%	52%	10,504	Below	-3
tamarack	3131	15%	15%	3030		
lowland hardwoods	3579	18%	18%	3636		
white cedar	3496	17%	15%	3030	Exceeds	+2
TOTAL	20,204	100%	1% = 202			

Figure 9.8 Dry-Mesic Pine/Oak Age Class Distribution -- Uplands

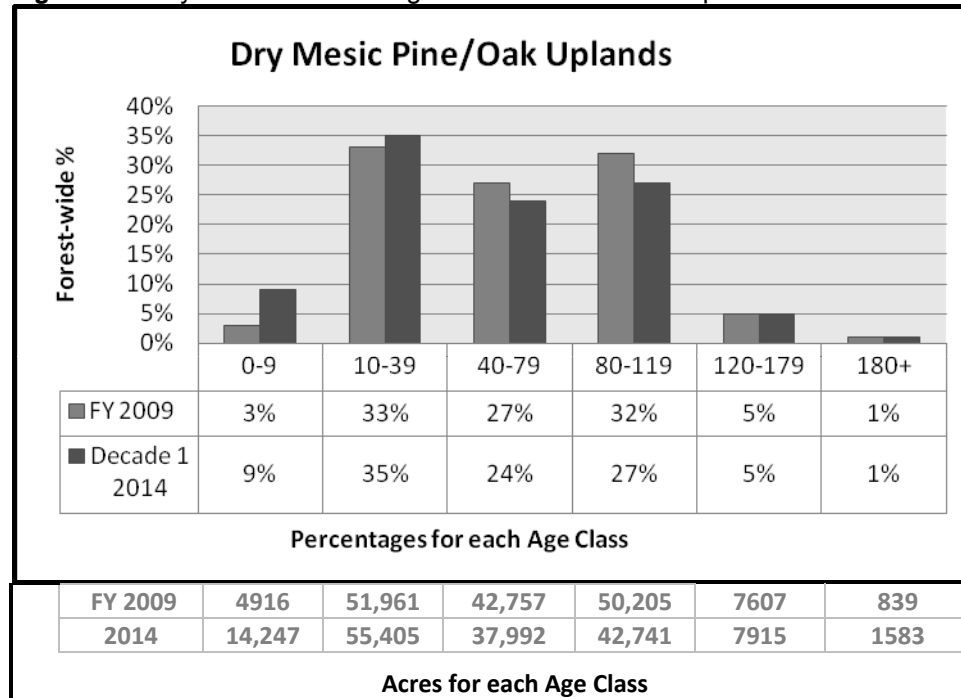
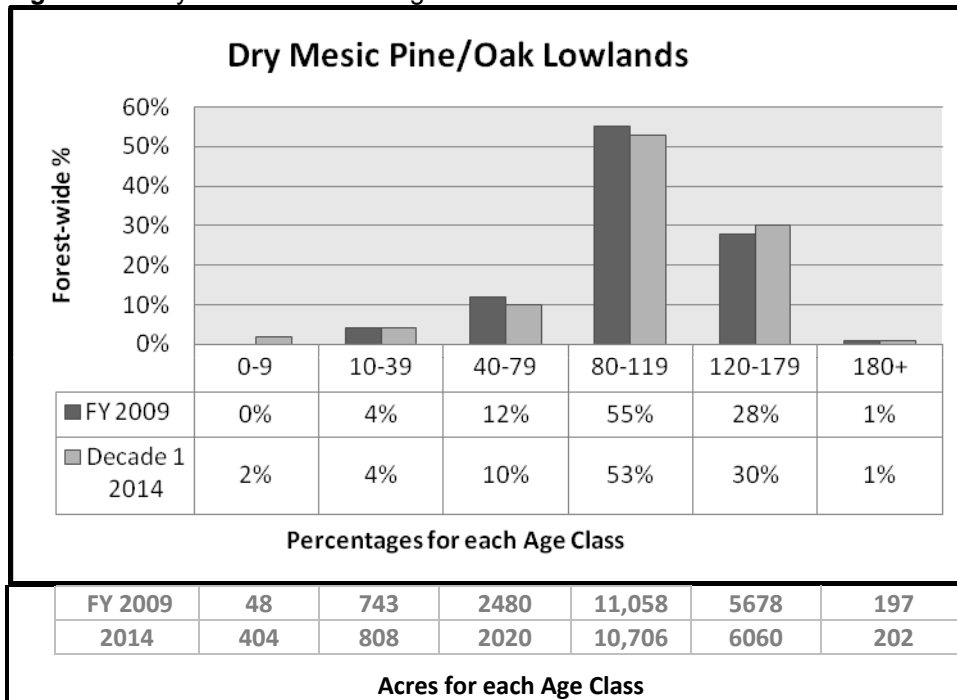


Figure 9.9 Dry-Mesic Pine/Oak Age Class Distribution -- Lowlands



TAMARACK SWAMP

Table 27. Vegetation Composition for tamarack swamp LE.

FOREST TYPE	2009 ACRES	% in 2009	10-yr Obj.	Acres to meet Decade 1	Meets, Exceeds, Below	% difference
Jack pine	214	1%	1%	197	Meets	
red pine	1686	9%	8%	1576	Exceeds	+1
white pine	98	0%	1%	197	Meets	
spruce-fir	1932	10%	16%	3152	Below	-6
oak	129	1%	0%	--	Exceeds	+1
Northern hardwoods	2905	15%	11%	2167	Exceeds	+2
aspen	11310	57%	56%	11,032	Exceeds	+3
paper birch	1328	7%	6%	1182	Exceeds	+1
upland white cedar	92	0%	1%	197		
TOTAL	19,694	100%		1% = 197		
black spruce	12807	41%	47%	14,664	Below	-4
tamarack	8849	28%	27%	8424	Meets	
lowland hardwoods	3773	12%	11%	3432	Exceeds	+2
white cedar	5753	18%	15%	4680	Exceeds	+3
TOTAL	31182	100%		1% = 312		

Figure 9.10 Tamarack Swamp Age Class Distribution -- Uplands

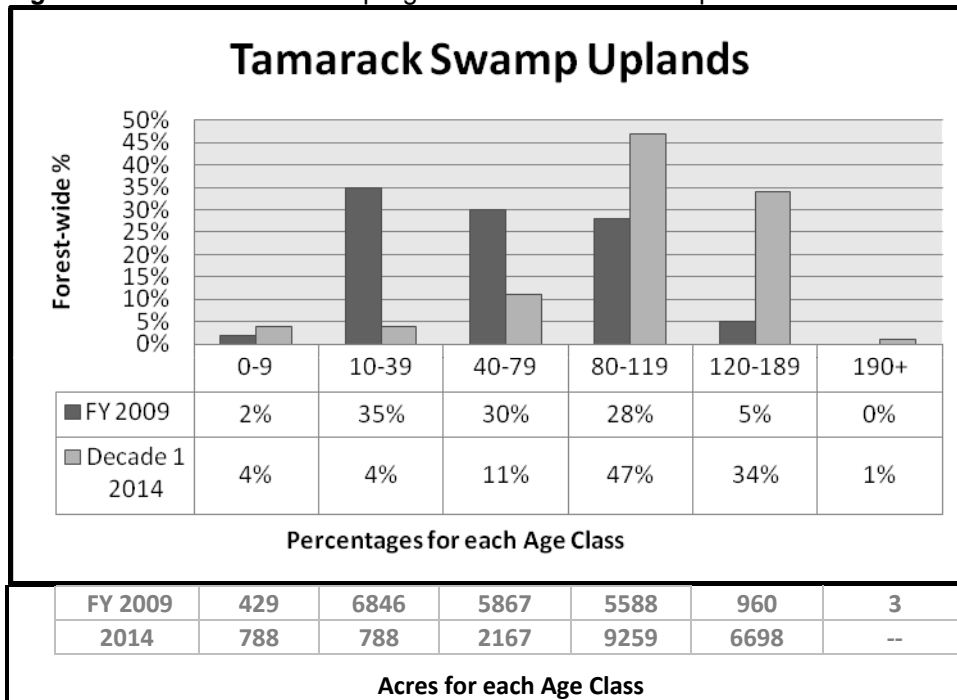
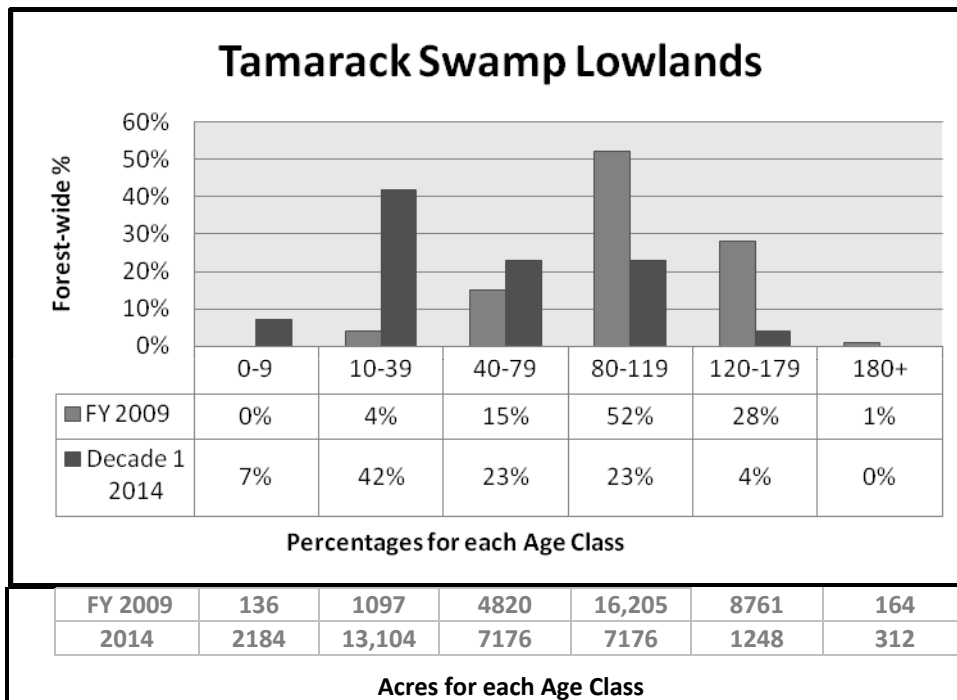


Figure 9.11 Tamarack Swamp Age Class Distribution -- Lowlands

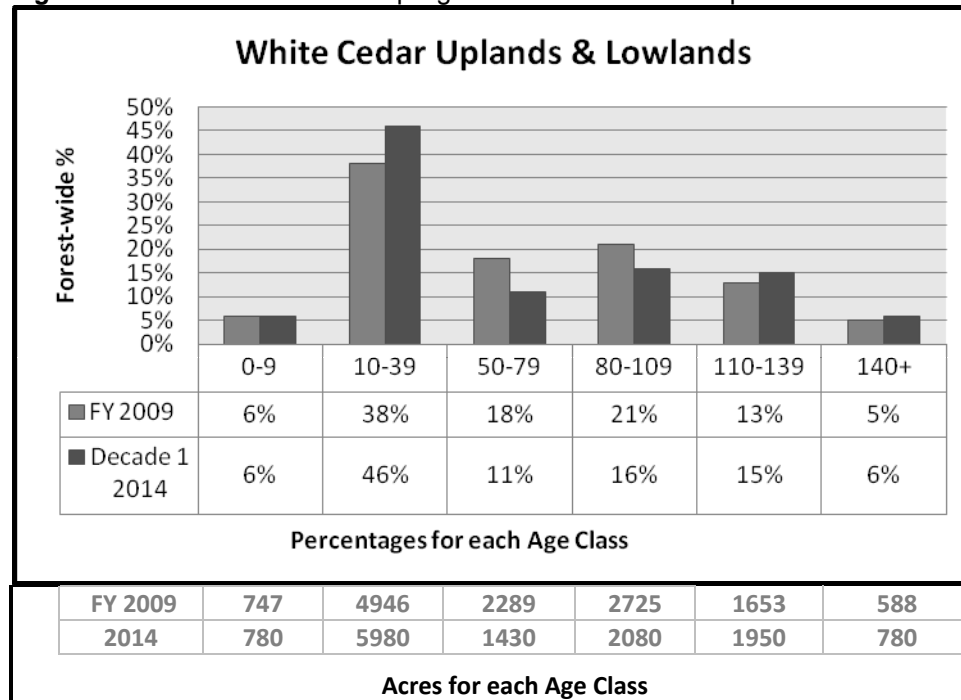


WHITE CEDAR SWAMP

Table 28. Vegetation Composition for white cedar swamp LE.

FOREST TYPE	2009 ACRES	% in 2009	Decade 1 2014	Acres to meet Decade 1	Meets, Exceeds, Below	% difference
Jack pine	23	0%	0%	--		
red pine	31	0%	0%	--		
white pine	0	0%	0%	--		
spruce-fir	399	3%	6%	780	Below	-3
oak	21	0%	0%	--		
Northern hardwoods	184	1%	2%	260	Below	-1
aspen	8,029	62%	57%	7410	Exceeds	+5
paper birch	88	1%	0%	--		
black spruce	1,018	8%	8%	1040		
tamarack	101	1%	1%	130		
lowland hardwoods	2,254	17%	18%	2340	Below	-1
white cedar	820	6%	9%	1170	Below	-3
TOTAL	12,968	100%	1% = 130			

Figure 9.12 White Cedar Swamp Age Class Distribution – Uplands & Lowlands



10. Timber

Monitoring Question:

Are harvested lands adequately restocked after five years?

Monitoring Driver:

(36 CFR 219.12(k)[5][i]. Lands are adequately restocked as specified in the forest plan.

Background:

National Forest Management Act (NFMA) regulations require that cutover lands be adequately restocked within five years. Stocking surveys on regenerated stands are conducted the first, third and fifth years after harvest to assess stocking levels. Regeneration may occur naturally or by planting or seeding.

Reforestation Monitoring:

Table 29. 2004 regeneration (regen) harvests by district.

DISTRICT	2004 Stand Regen Harvests	2004 Regen Harvest Acres	Regen Certification Acres	Summary
Blackduck	13	220	108	49% NFMA Compliance
Deer River	20	332	55	17% NFMA Compliance
Walker	26	438	218	50 % NFMA Compliance
CNF	59	990	381	38% NFMA Compliance

Fifty-nine stands (990 acres) received treatment by regeneration harvests in 2004 (Table 29). NFMA compliance was met on 38% of these sites by being fully stocked and certified by the end of 2009. Those stands not certified by the end of 2009 (609 acres) were due to record keeping errors or due to inadequate stocking. Drought and animal damage were major factors in low stocking levels. Some of these sites have already been inter-planted, replanted, or reseeded and are waiting for the cycle of stocking and survival surveys to be completed prior to certifications. Other stand surveys may have been missed due to difficulty of tracking in the corporate database. A list of stands with regeneration harvests in FY 2004 that have not been certified is available in the supporting documentation for this report.

Evaluation and Conclusions:

Adequate restocking of regeneration harvest stands was met on 38% of the sites harvested in 2004 by the end of FY2009. Sites not adequately stocked have already been inter-planted, replanted, or reseeded and are waiting for the cycle of stocking and survival surveys to be completed prior to certification.

11. Insects and Disease

Monitoring Question:

Are insects and diseases populations compatible with objectives for restoring or maintaining healthy forest conditions?

Monitoring Drivers:

(36 CFR 219.12(k)[5][iv]. Destructive insects and disease organisms do not increase to potentially damaging levels following management activities.

D-ID-3 Native insects and diseases are present and fulfilling their ecosystem function. Epidemics, when they occur, do not last longer than would be expected in a healthy ecosystem.

O-ID-1 Increase the amount of forest restored to or maintained in a healthy condition to with reduced risk of and damage from fires, insects, and diseases.

D-VG-5 Vegetation constantly changes through management activities and through naturally occurring disturbances and ecosystem recovery processes such as wind, fire, flooding, insects, disease, and vegetation succession. These fluctuations are within an ecologically and socially acceptable range of variability.

D-VG-8 The ecological processes of native vegetation communities are maintained, emulated, or restored at multiple landscape scales to provide representation of their natural range of distribution and variation within context of multiple-use goals and ecosystem sustainability. These include: processes such as disturbance from fire, wind, flooding, insects and disease; biological community and species interactions; nutrient cycling; and vegetation succession.

O-VG-11 Increase amount of a variety of prescribed burning practices to restore the ecological process of fire and provide habitat for threatened and endangered species and other wildlife that benefit from or require burned vegetation.

O-VG-12 Retain an adequate representation of naturally disturbed forest that is not salvaged, such as burned, flooded, blowdown, or insect- or disease-killed areas. Maintain these in a variety of patch sizes and distributions on the landscape.

O-VG-13 Where natural disturbances, human influences, or stand age or composition have combined to perpetuate stands that are brush-dominated or have sparse tree canopy on sites that could otherwise provide productive timber management opportunities, and where there may be adequate ecological representation of these types of conditions, seek to re-establish adequately stocked stands to address timber management objectives.

Background:

Insect and disease populations and trends have been monitored and reported annually since the 2004 Forest Plan.

Monitoring Activities:

Since the early 1950’s, aerial surveys have been a valuable tool for monitoring the status of forest insects and pathogens across the 16 million acres for forest land in Minnesota. For the past fourteen years, these surveys have been accomplished through the partnership of the Minnesota DNR Forest Health and Resource Assessment Unit and USFS, State and Private Forestry. Aerial sketch maps are digitized, ground truthed, and made available as a State-wide shapefile. These data are obtained by the Forest Silviculturist, clipped to the Forest’s boundary and summarized.

Drought is monitored using the State Climatology, University of Minnesota, website as well as the U.S. Drought Monitor website.

Evaluation and Conclusions

The 2009 Chippewa National Forest survey results are displayed in the Tables below. Generally these aerial surveys record currently active damage. In some cases it’s difficult to distinguish current year from previous year damage, though ground truthing is intensive. Survey results for the Forest include all ownerships within the Forest boundary.

Table 30. Forest damage acres by agent for all ownerships within the Forest boundary.

AGENT NAME	ACRES AFFECTED 2009	ACRES AFFECTED 2008	ACRES AFFECTED 2007	ACRES AFFECTED 2006	ACRES AFFECTED 2005	ACRES AFFECTED 2004
Aspen defoliation	0	0	5,107	0	0	0
Unknown	8	1,148	1,685	509	198	3,998
Spruce Budworm	0	0	837	0	0	155
Larch casebearer	1,387	785	378	255	351	83
Jack pine budworm	0	43	222	2,322	1,368	274
Eastern larch beetle	136	416	142	250	0	0
Ash decline	0	179	102	0	0	0
Flooding/Beaver	64	30	47	148	258	22
Bark beetles	92	0	0	4	0	0
Porcupine Damage	0	0	0	0	2	13
Two-lined chestnut borer	8	0	0	0	341	0
Abiotic	0	0	0	0	912	0
Rx Fire & Wildfire	54	79	no data	no data	no data	no data
Wind Damage	0	1	no data	no data	no data	no data
Aspen Decline	883	0	no data	no data	no data	no data
Large Aspen Tortrix	35	0	no data	no data	no data	no data

Table 31. Forest damage acres by severity rating for all ownerships within the Forest boundary.

HOST FOREST TYPE	ACRES AFFECTED 2009	ACRES AFFECTED 2008	ACRES AFFECTED 2007	ACRES AFFECTED 2006	ACRES AFFECTED 2005	ACRES AFFECTED 2004
Aspen	769	129	5,107	0	912	656
Hardwoods	32	640	1,469	411	75	1,736
Balsam Fir	0	346	626	42	0	155
Tamarack	1,522	1,200	519	560	733	696
Jack Pine	35	143	243	2,322	1,346	274
Softwoods	32	30	242	141	0	3
Black Spruce	0	0	211	0	0	0
White Spruce	1	1	no data	no data	no data	no data
Black Ash	149	179	102	0	0	366
Red Pine	110	10	0	13	24	16
Oaks	8	0	0	0	342	0
Birch	0	0	0	0	0	222
White pine	8	0	0	0	0	0
Unknown	0	0	0	0	0	423
TOTAL	2,666	2,678	8,519	3,489	3,432	4,547

Table 32. Forest damage acres by host for all ownerships within the Forest boundary.

SEVERITY	2009	2008	2007	2006	2005	2004
Trace (5% - 25% affected)	171	663	2,152	673	257	2,339
Light (26% - 50% affected)	95	1,299	6,328	541	3,133	1,994
Moderate (51% - 75% affected)	1,382	511	39	2,246	12	46
Heavy (>75% affected)	1,019	207	0	29	30	167

Summaries:

“*Unknown*” acres decreased from 1,148 to 8. This is due to the increasing skill of crews doing mapping and ground truthing for these aerial surveys.

Tamarack: On the Chippewa, we have 16,261 acres of tamarack cover type (FS ownership) plus tamarack occurs as a component in other lowland as well as upland cover types. As of 2009, there were 1,522 acres of tamarack damage on the Forest (all ownerships) based on aerial surveys. Of these, 37.3% (567 acres) was Forest Service ownership. The balance was 56.7% State, 4.3% Cass County, 1.7% private and less than 1% Itasca County. The 37 lowland conifer stands affected on Forest Service land range from 9 years old (1 stand) to 169 years old, with the mean age being 89 years. The majority of this damage is from larch casebearer.

Larch casebearer: Damaged acres have nearly doubled in one year, increasing from 785 in 2008, to 1,387 in 2009. Of the affected acres on the Chippewa, 15 were classified as “light”, 461 as “moderate”, and 911 as “heavy”. These occurred on 12 sites.

Larch casebearer is an exotic insect which reached the Lake States in the 1950's and is now considered to be "naturalized". Casebearer adults are moths that fly from late May to August and lay eggs on needles. Larvae hatch from the eggs and bore into needles and mine during the summer. The larvae use a hollowed out needle as a portable shelter or "case". They overwinter in the case fastened to a twig at the base of a bud. In the spring they resume needle mining before pupating and changing to a moth to complete the life cycle. Each larva needs to feed on 24 to 76 needles to complete its development. The most severe damage is done by the larvae in the spring of the year. Damaged trees and stands look off color, tan or brown, very similar to flooding damage. Needles have to be examined carefully to see the entrance hole in the mined out needle or to find the cases containing the larva.

Eastern Larch Beetle: Eastern larch beetle mortality was detected on 136 acres of the Chippewa NF in 2009, down from 416 acres in 2008. In stands where mortality was occurring, 18 acres was "heavy" (>75% affected), 10 acres was "moderate" (51% - 75% affected), 41 acres was "light" (25% - 50% affected) and 66 acres was "trace" (5% - 25% affected).

Eastern larch beetle is a native bark beetle. The adults are just over 1/8 inch long and they create small 1/16 inch diameter holes in the bark as they enter and exit the tree. Small holes, lots of dark brown boring dust and resin flow indicate attack during the summer. Larch beetles overwinter under the bark as larvae, pupae and adults in tamarack trees. Adult beetles emerge from the trees in the spring, seek out and bore into suitable live trees or fresh logging slash. There they construct galleries and lay eggs. Larvae hatch from the eggs, feed in the inner bark and eventually pupate and change into adults. Larval feeding in the inner bark girdles and kills the trees.

Healthy trees can be attacked and killed by this beetle. Since 1970, extensive outbreaks have been recorded throughout North America. Only species of larch are attacked by the larch beetle. Salvage harvest of stands with high mortality is recommended to utilize the wood, unless other values are a higher priority.





Red pine dying from bark beetles and wood borers following the Boulder Pine burn of 2005.

Bark beetles of pine: Prescribed fire and the prolonged drought from the summer of 2003 to the fall of 2009 have created stress conditions favorable for bark beetle build-up and damage. Little or no damage from bark beetles has shown up on the Chippewa for several years. In 2009, there were 92 acres detected of bark beetle damage in pine. These acres were divided between 7 stands and rated from “light” to “trace” in severity. Two stands totaling 16 acres in the Blackduck District, 1 stand of 5 acres in the Deer River District, and 4 stands totaling 71 acres in the Walker District. To reduce the chance of bark beetle damage, material cut during the growing season should be removed from stand within two weeks to prevent the build-up of bark beetle populations. Also, limiting severity of burns as measured by flame length, char and scorch, would also be beneficial in reducing incidence of bark beetles in pine.

Red pine: Damage in red pine increased 11 fold from 10 acres in 2008 to 110 acres in 2009. Fifty-six of these acres were due to bark beetles, where damage was patchy and classified as “light” or “trace”. The remaining 54 acres was due to two prescribed burns, the Rice Lake Rx Burn and the Foot Lake Rx Burn. Red pine morality on these burns was rated “moderate” (51% - 75% affected) to “heavy” (> 75% affected). These sites will be monitored for the next few years for bark beetles and continued mortality.

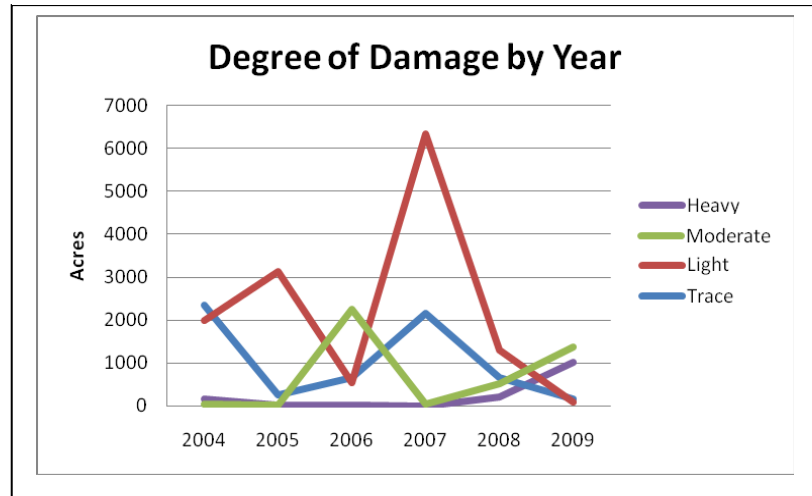
Aspen decline: Of the 833 acres of decline found on the Forest in 2009, 733 acres are in aspen. No acres of aspen decline were reported on the Forest in 2008.

For the past several years, aerial survey crews have detected thousands of acres of defoliation, discoloration, dieback and mortality of aspen statewide. Dieback is the most common symptom of “decline” but tree mortality is also occurring. Mortality can vary from scattered trees throughout a stand to patches of 30 to 40 dead trees scattered through stands. Trees with dieback also exhibited small off color (yellowish) foliage in the live parts of the crown. *Agrilus*-like larvae have been commonly associated with dead trees and in trees with extensive dieback. Poplar borer, *Saperda calcarata*, populations appear to have increased in some locations but are much less common than the *Agrilus*. *Armillaria* has not been found in the root collar area of declining aspen examined do date.

Figure 11.1 Severity of damage over six years

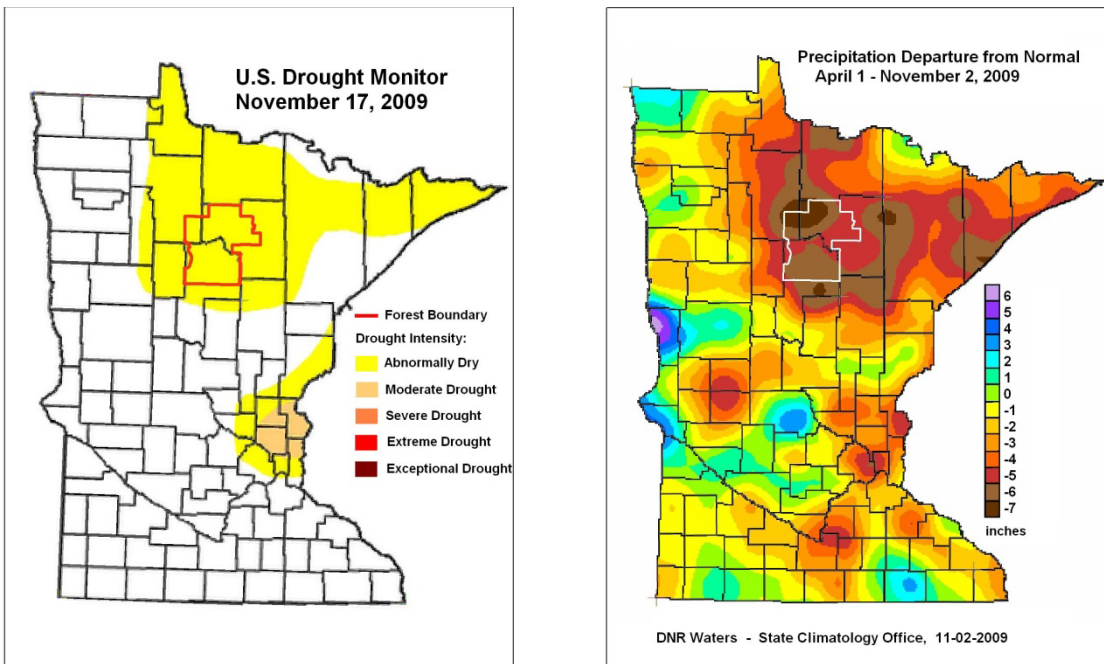
Damage Severity:

Though acres of total damage by forest health agents have dropped over the past few years, the severity of damage has increased. While the three lesser classifications have tended to fluctuate over time, the “heavy” damage classification has remained constant until 2008 and 2009, where it increased (Figure 11.1)



Prolonged dry spells and droughts (prepared by the Minnesota Climatology Working Group). Many agents affecting forest health are opportunistic. Trees stressed by drought are more vulnerable to these agents. The 2009 growing season precipitation totals were well short of historical averages across much of Minnesota. Although October rains improved the situation greatly in many locales, some Minnesota counties continue to be categorized as abnormally dry. In the drier areas of north central Minnesota, precipitation totals were roughly 75% of normal for the growing season, falling short of average by four or more inches. The geographic area covered by the Chippewa National Forest was 5” to 7” short of average precipitation for the growing season (note the location of the Chippewa NF boundary on the following maps).

Figure 11.2 Maps source: http://climate.umn.edu/doc/journal/drought_2009.htm



Emerald ash borer (EAB): *Agrilus planipennis* Fairmaire, is an exotic beetle that was discovered in southeastern Michigan near Detroit in the summer of 2002. On May 13th, an EAB population was found in St. Paul, Minnesota when a tree care worker doing routine visual inspections noticed a thinning crown in an ash tree.

When he peeled back the bark with his knife, he saw the characteristic S-shaped galleries of EAB, and contacted the Minnesota Department of Agriculture. A quarantine was enacted in the Twin Cities' counties of Hennepin and Ramsey. Results from dendrochronological studies of EAB-infested trees indicated that the St. Paul infestation dates back to 2006. This was one of the quickest discoveries of an EAB infestation to date. A second location was found in extreme southeastern Houston County.

EAB arrived in Minnesota sooner than most expected. With this imminent threat to the Chippewa National Forest, we are closely working with partners to limit the introduction of EAB to the Forest and surrounding area. The Forest has developed and implemented a firewood policy. It is following guidelines to add diversity to ash types in order to maintain forest cover on these sites after EAB arrives. The Forest planned and hosted a Black Ash Symposium for May of 2010 where forest managers from all agencies could learn more and collaborate. An EAB sanitation analysis and decision is planned for late 2010 to facilitate a quick response once EAB is discovered on National Forest lands.

Figure 11.3 Quarantined areas.

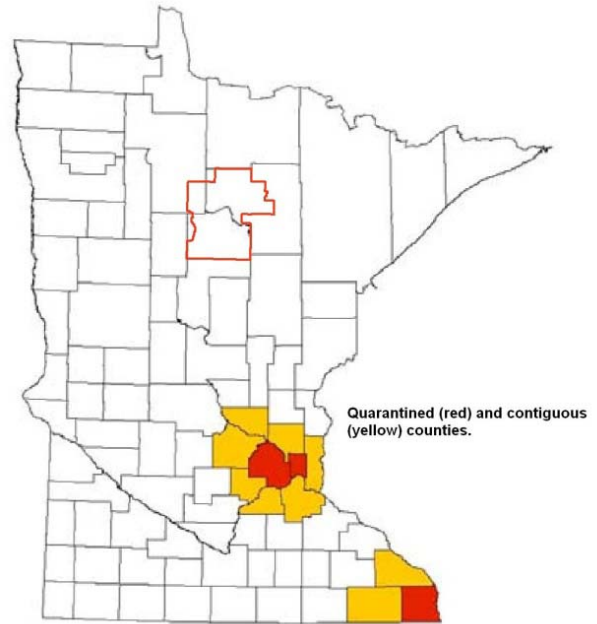
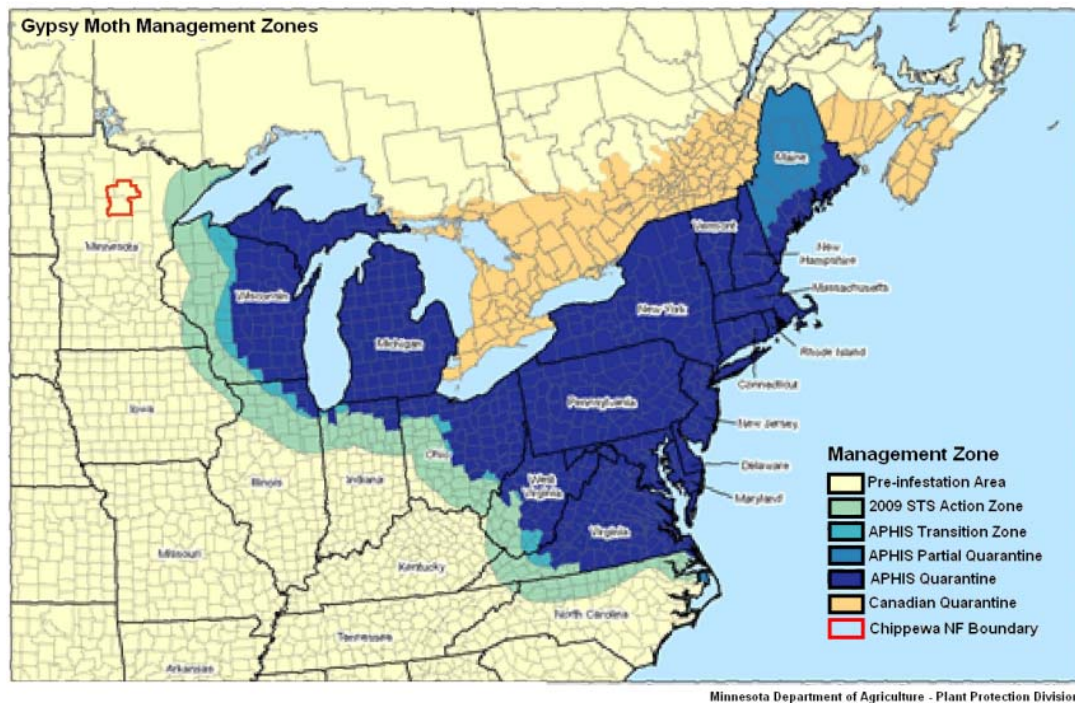


Figure 11.4 Left: Voucher specimen for a green ash, tree number 147. **Right:** Collecting seed.



Ash seed collection: The Chippewa started an ash seed collection program in 2009, beginning with on-site training by Bob Karrfalt from the USFS National Seed Lab in October, 2008. During the summer of 2009 the Forest identified 509 ash trees (257 green and 252 black), tagged them, GPSed coordinates, collected leaf vouchers, and photographed the trees according to National Seed Lab protocols. Identification of all 509 trees was verified by the J.F. Bell Museum of National History, University of Minnesota from the leaf vouchers. In the fall seed was collected from 150 of these trees (2 black ash, 148 green ash). The seed was sent to the National Seed Lab along with vouchers and photographs. Seed will be collected from the remaining trees as they produce seed crops. The seed crop on black ash was nearly non-existent in 2009.

Figure 11.5 Gypsy moth management zones.



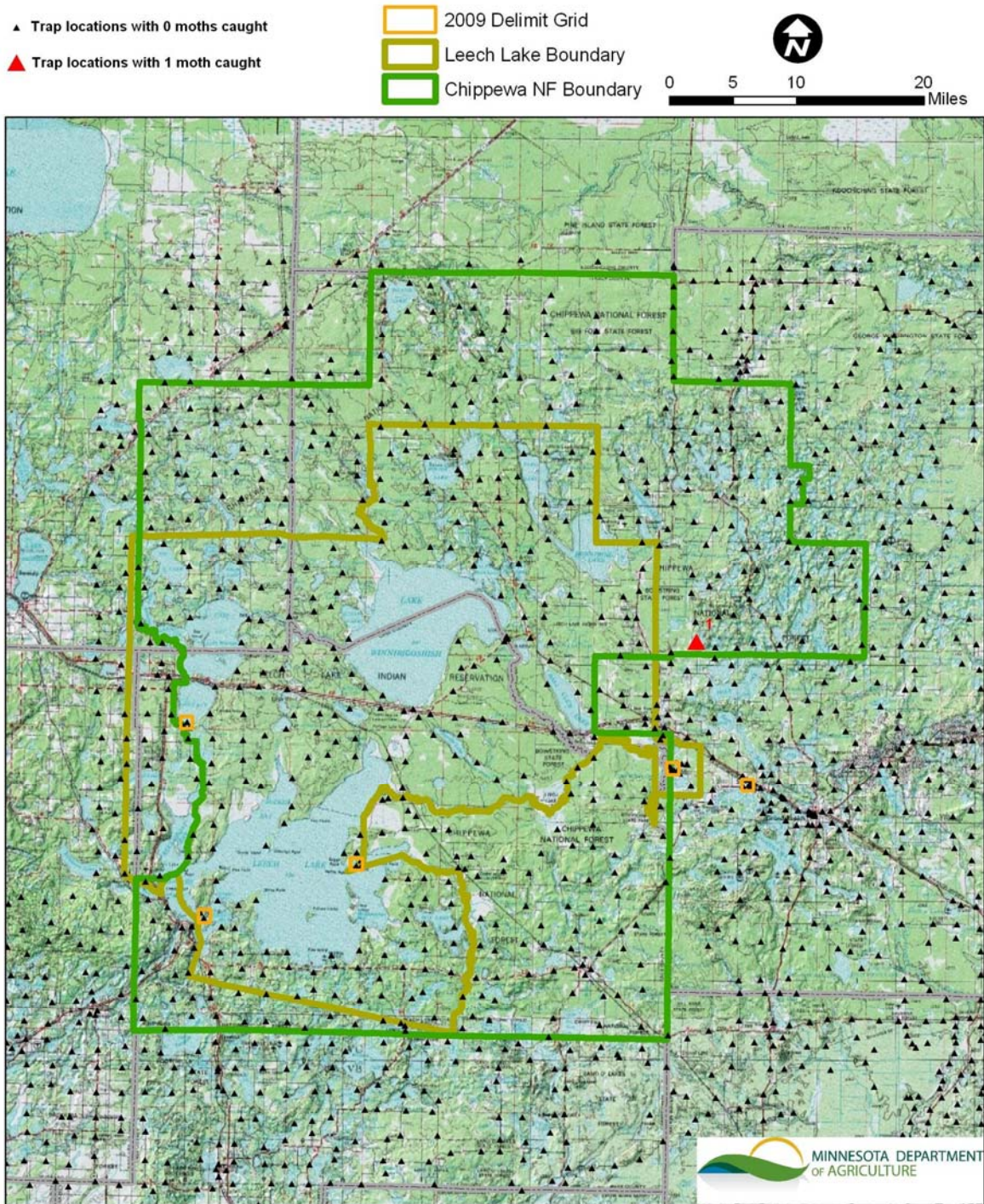
Minnesota Department of Agriculture - Plant Protection Division

Gypsy moth: The Minnesota Department of Agriculture (MDA) MDA set 23,693 gypsy moth traps across eastern Minnesota in 2009, as part of its annual program to monitor Minnesota's forests and urban areas for new infestations by gypsy moth. These traps caught a total of 27,870 moths statewide. This was more than twice the previous high of 12,000 moths caught in 2008. Nearly 99 percent of the moths collected were in traps in northeastern Minnesota's St. Louis, Lake and Cook Counties (the Superior National Forest).

In 2008, 30 traps were set on the Leech Lake Reservation in cooperation with USDA APHIS-PPQ. Of these, four traps contained male gypsy moths at the end of the trapping season. Delimited trapping at each of these positive trap sites was conducted in 2009. No male moths were trapped in any of these delimited traps. In 2009, 547 gypsy moth traps were also set on the Forest by the Minnesota Department of Agriculture, as part of the rotating grid. One moth was caught in one of these traps (see map). These combined results indicate that it's unlikely that a gypsy moth population has yet been established on the Chippewa National Forest or Leech Lake Reservation.

Figure 11.6 Gypsy Moth Survey Results

2009 Gypsy Moth Survey Results Chippewa National Forest and Leech Lake Reservation



American elm restoration: In May, 2009 the first 600+ American elm were planted in the three American elm planting sites on the Chippewa National Forest. Many Forest staff as well as school groups and staff from FS Research and State & Private Forestry participated. The elm seedlings were produced by the Northern Research Station in Delaware, Ohio. They are crosses between Dutch elm disease tolerant cultivars and surviving elms on the Chippewa National Forest. The objective is to develop seedlings that have both the characteristics of disease tolerance and cold hardiness necessary to re-establish American elm to its historic component of the Forest's landscape.



12. Fire

Monitoring Question:

How, where, and to what extent will prescribed fire be used to maintain desired fuels levels, and/or mimic natural processes, and/or maintain/improve vegetation conditions, and/or restore natural processes and functions to ecosystems?

Monitoring Drivers:

D-ID-4 – Accumulations of natural and activity fuels are treated to enhance ecosystem resiliency and to maintain desired fuels levels.

D-ID-5 – Fire is present on the landscape, restoring or maintaining desirable attributes, process, and functions of natural communities.

O-ID-2 – Establish, maintain, or improve the condition of vegetation conditions using prescribed fire, mechanical treatments, and other tools.

O-ID-3 – Treat areas of highest fire risk (based on Fire Regime, and Condition Class) to minimize the effects of unwanted wildland fire.

O-ID-4 – Reduce fuels and control vegetation in the understory of stands that have historically had naturally occurring low intensity surface fires.

Monitoring Activities: - Fuel Reduction

Based on reviewing the Forest Service Activities Tracking System (FACTS) database, the forest accomplished 6958 acres within 31 projects that were treated to reduce fuels during FY 2009. Of the total acres treated for fuels, 2497 acres were accomplished as primary fuels projects, and 4461 acres were accomplished as integrated projects with other disciplines.

The forest accomplished 2318 acres of prescribed burning during the course of the fiscal year. Of these acres 1594 acres was in the form of wet meadow burning, 371 acres coming in the form of upland burning, and 353 acres in the form of pile burning.

Wet Meadow Burning

From a hazardous fuels standpoint the objectives of the burn to be monitored were related to fuels reduction. The objectives included:

1. Remove 50% or more of the 10-hour fuels across 50 – 100% of the burn area.
2. Remove 50% or more of the 10-hour fuels across 75 – 100% of the burn area.
3. Top Kill 25% or more of encroaching brush on 50 – 100% of the burn perimeter.

To monitor for these objectives, photo points were established within the unit, and ocular measurements of pre and post burn fuel loadings taken.

Upland Burning

The objectives for these burns may vary based on the overall objectives of the burns. Generally the objectives for hazardous fuels reduction are:

1. Remove 75% or more of the 1-hour fuels.
2. Remove 50% or more of the 10-hour fuels.
3. On average, limit Crown Scorch on over-story pine to < 50%.

To monitor for these objectives, plots are established and either Brown's transects or ocular measurements are taken. Due to variability of additional objectives for specific burns, none hazardous fuels related objective monitoring is not addressed here.

The remaining 4640 acres of fuels reduction was accomplished with the use of hand and mechanical means. 3540 acres of mechanical fuels reduction were accomplished with harvest activities. 578 acres of hazardous fuels reduction were accomplished with a partnership with the Leech Lake Band of Ojibwe to mechanically treat non-Forest Service land around the Ball Club area. This project is helping to create defensible space along with areas of reduced fire behavior on Tribal lands. The remaining 522 acres was accomplished through various hand and mechanical projects.

Evaluations and Conclusions:

Wet Meadow Burning

Based upon the data collected from the photo points the burning is successful in reducing the 1 hour (<1/4" diameter) fuel loadings within the unit. The average reduction measured at the photo points was 87% reduction of 1 hour fuels.

The 10 hour (1/4" to 1" diameter) fuels reduction was also successful within the burn unit, with an average of a 69% reduction of the 10 hour fuel.

The ocular estimate of the percentage of top killed brush within the burn unit was estimated to be a 60% reduction throughout the unit.



Based upon the monitoring of the wet meadow burning, the forest is meeting the hazardous fuels reduction objectives for the burn. While the objectives are being met, the benefits from a fuels standpoint are short lived due to the fact that a new crop of fuel (meadow grass) will regenerate during the growing season. While the benefits of accomplishing the burning are short lived, they do aid in the reduction of hazardous fuels and also the occurrence of human caused fires within the burn area. The benefits of burning are also not centered on fuels reduction alone, but have other resource benefits that are enhanced by accomplishing the burning.

Upland Burning

Based upon the fuels transects that were monitored for pre and post burn fuel loadings, the forest is successful in accomplishing the hazardous fuels objectives of the upland burn units. Generally the results of the 1 hour fuels reduction are exceeding the objective of removing 75% of the 1 hour fuels within the units being burnt. The reduction of the 10 hour fuels are exceeding the objective of 50% removal of the fuels. Based on the ocular estimates of crown scorch of the overstory pine is typically within the 20-25% range for all units being burnt.



Based upon the monitoring results, we see that the upland burning program is being successful in reducing the fuel loading that can contribute to increased fire behavior should a wildland fire occur within the burn units. By decreasing the fire behavior within these units, the overstory pines have an increased ability to survive a wildland fire should one occur within the units. Additionally, these burns may become effective areas for suppression activities to occur due to the decreased fuels loading and fire behavior.

Monitoring Question:

What level of wildland fire on the landscape is appropriate and desirable and to what extent is unwanted wildland fire on the landscape suppressed?

Monitoring Drivers:

D-ID-6 – Unwanted wildland fire is actively suppressed where necessary to protect life, investments, and natural resources. The full range of appropriate management response is considered when managing unwanted wildland fires.

Monitoring Activities: - Wildland Fire

Based on fire reports completed for each wildland fire that occurred within the protection area of the Chippewa National Forest, there were 24 wildfires which burnt a total of 251 acres during FY 2009. These figures were short of the 20 year average of 54 fires and 330 acres for the forest. The smallest fire was 0.1 acres, the largest 108 acres, and the average wildfire acreage burned was 10.4 acre. All wildland fires on the forest were contained/controlled during initial attack operations.

Table 33 displays FY 2009 fires, acres burned, and time of year fires occurred for fires one acre or larger. Table 34 shows wildfire acres burnt during the past 5 years and also the 20 year average for each statistical cause. Table 35 shows the number of wildfires by statistical cause during the past 5 years and also the 20 year average.

Table 33. 2009 wildfires 1 acre or larger.

Fire	Acres Burned	Time of Year
Ball Club 1	1.7	April
Big Curve	2.9	April
County 9	3.1	April
Lucille	33	April
Federal Dam 1	64.5	April
Church	1.3	May
Highbanks	4	May
Prom	29.5	May
Goose	108	September

Table 34. Wildfire acres during past 5 years and fire cause.

Cause	2005	2006	2007	2008	2009	20 Year Average
Lightning	0	1	0	0	0	4
Equipment	0	1	2	5	0	5
Smoking	3	2	0	0	0	9
Campfire	1	3	1	1	30	10
Debris Burning	4	21	2	2	7	37
Railroad	1	1	1	0	0	47
Arson	25	40	25	3	176	189
Children	0	16	3	2	4	39
Misc.	453	3	13	16	34	228
TOTALS	487	88	47	29	251	330

Table 35. Number of wildfire by statistical cause during the past 5 years.

Cause	2005	2006	2007	2008	2009	20 Year Average
Lightning	0	4	0	0	0	1
Equipment	0	2	3	2	0	1.65
Smoking	1	1	0	0	0	1
Campfire	4	3	2	3	3	3.1
Debris Burning	11	32	11	9	7	17.5
Railroad	1	1	1	0	0	1.85
Arson	24	21	7	5	4	15.95
Children	0	4	3	3	4	4.1
Misc.	8	5	15	10	6	7.8
TOTALS	48	73	42	32	24	53.95

Evaluations and Conclusions:

Looking at the statistics for wildland fires in FY 2009 and over a twenty year average on the Chippewa National Forest, it becomes obvious that person caused fires are the main cause of wildland fires on the forest. These fires are also the fires that result in the most acres burnt. The Forest Plan does not allow for the management of wildland fire for resource benefit; thus all wildland fire is deemed to be unwanted wildland fire and actively suppressed to protect life and natural resources.

13. Soil

Monitoring Questions:

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

In FY 2009 the focus was on soil compaction and rutting during a non-frozen soil harvest on heavier textured soils (loam to clay loam).

Monitoring Drivers:

Excerpts from the Chippewa National Forest 2004 Land and Resource Management Plan pertinent to soil compaction and rutting:

D-WS-12 Soils recover from natural disturbance events and absorb the effects of human disturbances without reducing productivity and function. Soils contribute to ecosystem sustainability...There is minimal compaction, displacement and puddling.

O-WS-9 Protect and restore areas where soils are adversely impaired and contributing to an overall decline in watershed condition, soil productivity, soil quality and soil function. Do this by using management practices, inventory and monitoring results and findings from the inventory of ecological units.

O-WS-10 During all management actions involving soil disturbance:
One of the statements is, “Protect soil-hydrologic functions by minimizing rutting, puddling and compaction.

Table G-WS-8, Limitations on Management Activities Designed to Safeguard Soil Productivity, Pg. 2-16

Table 36. Region 9 Soil Quality Standards

Indicator	Measure	Metric	Reliability
<i>Puddles and depressions</i>	Ocular assessment	Puddles that fail to meet the rutting standards described below	High – features easily detectable
<i>Deep Ruts</i>	Ocular assessment	Relatively continuous tracks dominantly in excess of 6 inches deep and 10 feet long	High – features easily detectable

From the Voluntary Site-Level Forest Management Guidelines (MN Forest Resource Council, 2005):

According to the 2004 Chippewa National Forest Land and Resource Management Plan, the Forest Service will implement the site-level guidelines unless the Forest Plan provides greater protection or there are different regulations, laws or policies that would dictate a different approach. Guidelines that apply to preventing soil erosion are as follows:

Timber harvesting should be designed and conducted to achieve the following beneficial outcomes regarding soil productivity (Pg.10, Timber Harvesting, soil compaction and rutting):

- Majority of soil on site is free from any compaction or traffic.
- Minimal rutting in skid trails, roads and landings; and avoidance of rutting in the general harvest area.

Use caution when operating heavy equipment on sites whenever adverse soil impacts are likely. Soil susceptibility to compaction and rutting is primarily dependent on soil texture and moisture content. Soils are most susceptible to compaction, rutting and puddling at the following times: (Pg. 20, General Guidelines)

- During spring and early summer months.
- Immediately following heavy rains.
- During the period between when transpiration ceases in the fall and before freeze-up occurs.

Background:

Soil compaction and rutting are concerns in regard to soil productivity due to the heavier soil types found on parts of the Chippewa National Forest and due to the wet to moist soil conditions during certain times of the year.

The potential for compaction is caused by heavy vehicles driving over a site during harvesting or site preparation. Soil compaction can affect tree productivity by reducing aeration and increasing the penetration strength necessary for roots. Some research has shown that compaction can take years before it recovers to the pre-compaction levels (Poyry, 1994). Rutting is caused by the tires of heavy equipment typically under wet soil conditions. Rutting can affect the hydrologic processes and the aeration of the soil.

Question: Is soil compaction and rutting occurring on harvest sites during non-frozen conditions on non-sandy soils

Monitoring can help determine if the Chippewa National Forest's recommended mitigation measures, such as harvesting during non-frozen ground conditions are affecting soil productivity.

Monitoring Activities:

Six sites were monitored for compaction and rutting in October 2009 by the Forest Soil Scientist. Sites were selected by using an ArcMap GIS project that was built using a Terrestrial Ecological Unit (TEU) layer and a layer which showed harvested timber stands in the past year.

Six clearcuts on heavier textured soils and harvested during non-frozen ground conditions in 2009 were selected. Two sites were chosen randomly from each district. Sites that were sandy soils were not chosen since compaction is not as much of a concern on sandy soils. Another site was monitored after mechanical scarification.

The methodology used was to walk over the site and look for visual signs of rutting, puddling and compaction. This methodology is similar to that used by the Minnesota Forest Resources Council (MFRC) and Minnesota Dept. of Natural Resources. The number of ruts and puddles, as well as the depth and length of ruts and puddles was observed. Compaction at the landings and skid trails was observed. Size of landing was recorded.

In addition to these six sites, 7 other sites were monitored by a forest-wide team for best management practices.

A more detailed report and an Excel spreadsheet will be maintained which lists the stands that were monitored, what they were monitored for and what was found on the site.

Evaluation and Conclusions:

Of the six clearcuts monitored one site had rutting. Most of the rutting occurred close to wetlands on the fringe of the harvest area. It was not detrimental according to Region 9 Forest Service standards (over 5% of the activity area). It was likely that some compaction occurred due to the high soil moisture - low soil strength conditions.

The site chosen for mechanical scarification monitoring has a sandy loam soil texture. The soil was furrowed during the scarification process with some shallow rutting caused by the tires. Most of the scarification on the Chippewa National Forest occurs on sandy soils to prepare sites for planting pine. Compaction on coarse textured soils, such as sandy soils, is not as much a concern as compaction on heavier textured soil.

The area of landings were measured for excessive size, the skid trails were not measured, but were observed. Region 9 soil standards do not specify the size of landings and skid trails but limit the amount of detrimental soil disturbance to less than 15% of the site. The Minnesota Voluntary Site-Level Guidelines suggest no more than 1-3% of the area for roads and landings. On all sites the landings and skid trails did not appear excessive in size. In the future, consideration should be made to actually measure the skid trails and the size of the stand.

Although soil erosion was not a focus during monitoring, slight erosion was noted on a skid trail. Waterbars were not constructed but slash was put over the trail.

Evidence of rutting on non-frozen ground in one of the six sites monitored suggests that monitoring should continue on non-frozen ground. The focus could be on moderately well drained soils and /or stands that have wetlands in or adjacent to the stand.

With regard to the 7 sites monitored by a forest-wide team, on the Blackduck District no rutting or soil erosion was observed and there was general agreement that the amount of slash remaining (nutrient retention) was adequate for the Decker timber sale. The extent of compaction from the landings and skid trails did not appear excessive. On the Deer River District we looked at stands that were not yet harvested to determine if the appropriate mitigations had been identified during the planning process and applied during sale layout. The soil scientist confirmed the mitigations were appropriate for the sites.

Recommendations:

- Specifically sample harvest sites where the soils are moderately well drained, the textures are loamy to clay loam and /or there are wetlands adjacent or in the harvest unit.

- Sandy soils could be monitored for compaction and rutting, especially fine sands and moderately well drained sands.
- Site selection method should be reviewed to ensure all the harvest sites meeting the soil texture criteria are in the sample pool.
- Timing is important, especially with aspen regeneration. Since regeneration can happen relatively quickly, it is easier to make observations before the vegetation re-sprouts.
- Illegal OHV trails could be monitored for the amount of rutting and compaction that occurs.
- One question to be answered from the 2004 Forest Plan: Is the recommended season of operation suggested in the guidelines for moderately well drained, loamy to clay loam sites appropriate?

After four years of focusing on a specific aspect of soil monitoring – soil compaction, nutrients and erosion, it was decided to change strategy to monitor a site to look at all the factors at the same site. A nationwide rapid monitoring assessment method (USFS, Dumroese, Howe, Napper, 2009) was demonstrated on the Chippewa National Forest in October 2008 at the sub-regional soil, water and air workshop.

References:

Jaakko Poyry Consulting, Inc. 1994. Generic Environmental Impact Statement on Timber Harvesting and Forest Management in Minnesota. Forest Soils chapter.

Minnesota Forest Resources Council. Sustaining Minnesota Forest Resources: Voluntary Site-level Forest Management Guidelines for Landowners, Loggers, and Resource Managers. 2005.

U.S. Forest Service. Chippewa National Forest, Land and Resource Management Plan, 2004.

U.S. Forest Service. (D. Dumroese, S. Howe, C. Napper) Soil-Disturbance Field Guide. August, 2009.

14. All Resources

Monitoring Question:

Monitoring and evaluation requirements will provide a basis for a periodic determination of the effects of management practices. 36 CFR 219.11(d).

Monitoring Driver:

At intervals established in the plan, implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards, guidelines, sale design features, and best management practices (BMPs) have been applied. Based upon this evaluation, the interdisciplinary team shall recommend to the Forest Supervisor such changes in management direction, revision, or amendments to the forest plan as are deemed necessary. (36 CFR 219.12(k)).

Background:

Informal monitoring of Forest Plan standards and guidelines, sale design features, and mitigation measures, and BMPs identified in the Environmental Assessment (EA) occurs at all phases of the timber sale design, layout and implementation. Periodically more formal monitoring trips are scheduled that involve an integrated team of specialists and district personnel. In 2009, four timber harvest units were monitored to see how well the project objectives were met, as well as Forest Plan standards, guidelines, project sale design features and mitigation measures, and BMPs. The monitoring group consisted of the forest planner, district NEPA coordinators, timber sale administrator, timber specialist, timber markers & cruisers, forest fish & wildlife biologist, district wildlife biologists, forest soil scientist, fire/fuels staff, botanist, reforestation specialists, and district silviculturist.

Sites were selected from a list of timber sale units harvested within the last year on the Blackduck District. While not random, final site selections were not based on prior knowledge of the sites but did consider logistics such as proximity of units, types of harvest, and ease of access by a group. The criteria were that the Decision Notice for the project was signed under the 2004 Forest Plan and harvest had been completed within the last year. Four cutting units were selected from the Monk and Decker timber sales which was covered by the Northwoods Vegetation Management EA and decision (signed 3/29/06).

The team broke into four groups to address the following: wildlife, silviculture/vegetation, soils, and wetland/riparian. Each group was provided with maps, prescriptions, sale design features, and mitigation measures applicable to each unit. A briefing was provided on treatments planned, and timing of harvest activities, and difficulties or complications encountered during harvest. Team members looked at the cutting units, filled out forms, and met jointly to report out and discuss findings. The following is a brief overview of the results.

Monitoring Activities:

Several post-harvest units were visited. In addition, monitoring of sale units after they were laid out but before they were harvested also occurred.

Monitoring After Harvest

Site #1 – Monk Timber Sale Cutting unit 9 Compartment 59 Stand 32

This was a 30 acre plantation of primarily 35 year old white spruce that was commercially thinned to an average basal area of 110 sq. ft.

- Unit was harvested in October 2008. Frozen or dry soil requirements were met.
- Silviculture/Vegetation – Basal area objective was met. To increase species diversity aspen, balsam fir, jack pine, birch, and basswood were left on site. These species often occurred in areas of past windrow piles. Marking of skid trails in advance by the cruisers resulted in minimal bole damage to trees during logging operations. Spruce was an acceptable species given the soils on this site.
- Wildlife – Two small slash piles per acre were required for lynx. Piles did not meet this density but the number and distribution was acceptable according to district wildlife biologist. Other species were left on site to meet diversity objectives. There were no activity timing restrictions.
- Wetlands/riparian— Filter strips met the guidelines. Mechanical operations were evident in the filter strips but with less than 5% soil exposure. No water features requiring riparian buffers were present in the unit. Wetlands are difficult to identify during winter time when many of the units are laid out.
- Soils – Area in skid trails and landings was less than 10-15% of cutting unit. No observed compaction, rutting, or erosion. Amount of coarse woody debris was acceptable.
- In summary, prescription corresponded to what was planned in the EA. Administration of the sale was excellent and the resulting condition of the stand was very good.

Site #2 – Monk Timber Sale Cutting unit 10 Compartment 157 Stand 37

Unit is 22 acres and consists of white spruce with varying amount of aspen, birch, balsam-o-gilead, balsam fir, and a few hardwoods. A group selection uneven-aged harvest was prescribed to cut aspen, balsam-o-gilead, birch, and balsam fir. Spruce clumps were to be thinned to 100 sq. ft. basal area. To achieve regeneration, mechanical site preparation for planting of white pine was planned in the gaps created. Animal damage control, release/weeding, and pruning of white pine was identified. Northern hardwoods were to be retained for species diversity. The road provides access to Gimmer Lake although the road was gated and closed. To achieve the moderate visual objective, reserve patches near the road were to be retained. Also slash was to be removed within 25 feet of the road.

- Unit was harvested in October 2008. Frozen or dry soil requirement was met.
- Silviculture/Vegetation –Prescription was implemented and objectives met. Uneven-aged management is usually not prescribed in white spruce. Openings were created by harvesting pockets of mature aspen. Establishing white pine in these areas will be a

challenge. The unit is close to a road making it readily accessible for planting and tending.

- Wildlife -- Two small slash piles per acre were required for lynx. Piles did not meet this density but the number and distribution was acceptable according to the district wildlife biologist. Hardwood species were left on site to meet diversity objectives. There were no activity timing restrictions.
- Wetlands/riparian— Filter strips met the guidelines. Mechanical operations were evident in the filter strips but with less than 5% soil exposure. No water features requiring riparian buffers were present in the unit.
- Soils –Area consisting of skid trails and landings is well within the percentage guidelines (10-15% and 1-3%, respectively). Landings were difficult to locate. No soil compaction, rutting or erosion was noted within unit. Timing for logging was from July 1 to September 15 due to clay component in soils. Logging actually occurred in October but under dry soil conditions.
- In summary, activities corresponded to those specified in the EA. Forest Plan objectives, standards and guidelines have been met. Mitigation was effective.

Site #3 – Decker Timber Sale Cutting unit 2 Compartment 46 Stand 10

This is a 22 acre, 71 year over mature jack pine stand with pockets of aspen. Prescription was for clearcut with reserve trees (removed jack pine, birch, and balsam fir). Rx was modified from natural regeneration of jack pine to planting. Release and animal damage control was also planned. Reserve areas, 6-10 snags, and other species were to be left. Pockets of trees were left along the road for visuals.

- Unit was harvested in October 2008. Frozen or dry soil requirement was met.
- Silviculture/Vegetation –Clearcut with reserve was planned and implemented. Large red pine was retained. Stocking surveys indicated an over abundance of aspen which resulted in a prescription modification from natural jack pine to planting of jack pine. Good communication with the marking crew occurred during layout.
- Wildlife –Legacy patches over 5% of the areas were left. All red pine and birch were retained to meet the requirement for green tree residuals. A small number of snags were distributed across the unit and outside the patches. Although some lynx piles were left, there were not 2 piles/ acre.
- Wetlands/riparian— Filter strips met the guidelines. Mechanical operations were evident in filter strip with less than 5% soil exposure. No water features required riparian buffers.
- Soils – Area consisting of skid trails and landings is within the percentage guidelines (10-15% and 1-3%, respectively). Approximately 50% of the slash was returned for nutrient

retention in accordance with Forest Plan direction on this sandy site. Logging resulted in no soil compaction, rutting or erosion. Ample coarse woody debris was left. Logging could occur at anytime except during spring break-up. Road to unit will be left open for firewood cutters, and then slash distributed and blocked before the sale closes.

- In summary, activities in prescription correspond to those identified in the EA. Mitigation was effective.

Site #4 – Decker Timber Sale Cutting Unit 1 Compartment 46 Stand 22

This was a 14 acre jack pine stand with strips of planted red pine and stringers of aspen. The red pine has not been previously thinned and the jack pine is beginning to fall apart. Prescription calls for designating the jack pine and aspen to cut. Also want to maintain 50% crown cover for goshawk in the Skimmerhorn foraging area (mitigation measure identified in the EA). Openings were to be naturally regenerated with jack pine but this was modified to plant jack pine.

- Harvest occurred in October 2008. It was acceptable to log throughout the year except during spring break-up.
- Silviculture/Vegetation – Treatment followed the EA and prescription, however, the 50% crown cover was not achievable. The strip pattern of the red pine, aspen and jack pine did not lend itself to maintaining 50% canopy closure. Portion of the unit appeared to be a clearcut, the remainder a partial cut below the 50% canopy closure. The overall canopy closure appeared to be 20-30%. Desired future condition should be achievable. Access was difficult to some trees marked for harvest which required some additional trees to be removed.
- Wildlife – Due to the distribution of jack pine and aspen (in strips), the prescription was not able to achieve the 50% canopy closure. However, based on the information from the stand exam, this was recognized during the planning process. As a result the district ranger and IDT visited the site. Considering the existing condition of the stand relative to surrounding stands on the landscape, the decision was made to include the stand for harvest. Snags were limited in the unit. A small number of lynx piles were distributed throughout the unit but the density of 2/acres was not met.
- Wetlands/riparian— Filter strips met the guidelines. Mechanical operations were evident in the filter strip with less than 5% soil exposure. A wetland on the edge of the stand was avoided by excluding it from the unit boundary. No water features required riparian buffers.
- Soils – Area consisting of skid trails and landings is within the percentage guidelines (10-15% and 1-3%, respectively). No soil compaction, rutting or erosion noted except on skid trails and landings. Too much slash occurred on the landings for reproduction to occur. Coarse woody debris (2-5 logs greater than 12 inches diameter) was distributed throughout the unit. Road will remain open because it accesses other ownerships.

- In summary, this unit required additional consideration because of the site conditions. Forest Plan objectives, standards and guidelines were not met for goshawk but were met for the other resources.

Evaluation and Conclusions:

- Overall, district personnel did a good job of implementing prescriptions, design features, mitigation measures, BMPs, and activities as planned in the EA.
- Sale design features and mitigation for riparian/wetlands were implemented and effective. Wetlands weren't mentioned in the prescriptions although most stands had them. Wetland features are difficult to identify in the winter when sale layout frequently occurs. Recommended that the soils scientist and hydrologist spend time working with the marking crew
- Brush piles for lynx were not included in the timber sale contract and were not at the prescribed density of 2/acre. Re-evaluation of the need to retain piles at 2/acres needs to occur in future projects.
- Seeding mixtures for roads need to be re-evaluated and adjusted to include only native species.
- Generally, mitigation for wildlife was implemented and effective. Legacy patches, adequate numbers of green reserve trees, and species for diversity were left. Sufficient numbers of snags generally occurred in the regeneration units. Except for one unit within a goshawk territory, protection for TES species was implemented and effective. In this case, the 50% crown closure was not met.
- Harvest activities were conducted within the seasonal restrictions.
- Soils were well protected. There was little or no evidence of rutting or compaction. Coarse woody debris was adequate. Slash was retained on site for low nutrient soils.
- Winter logging and cleaning equipment has minimized non-native invasive species introduction and spread.

Monitoring Before Harvest

One of the suggestions from a previous year was to take a look at sale units after they were laid out but before they were harvested. In particular, this would provide us with information on the abundance of snags and conifer regeneration which are often impacted during harvest operations. Snags and regeneration are typically protected through the use of clauses rather than marked. We looked at 3 units, 2 in the Willow River Timber Sale, 1 in the Loony Pine Timber Sale. They were planned in the Southeast EA during 2006. Follow-up monitoring should occur after harvest to determine the effects of harvest operations on achieving objectives.

Site #1 – Willow River Timber Sale Unit 1

Compartment 260 Stand 30

This is an aspen stand with a few black ash. Prescription is for a clearcut with reserves. In the EA this stand was planned for conversion from aspen to another species, but the line officer dropped the conversion in the decision due to the expense associated with mechanical or burning site prep, planting, and release needed to shift from aspen to another species.

- **Silviculture/Vegetation** – Unit boundaries were clearly marked for a clearcut with reserves. Predominantly aspen which will be removed. This stand is old and should be treated. This stand will stay an aspen stand since it is not being converted. The prescription objectives and the DFC should be achieved. 4000 seedlings/acre after 3 growing seasons are expected.
- **Wildlife** – The EA does not call for a legacy patch in this stand because stand is less than 15 acres. However, the prescription calls for 1.2 acres in legacy patches. No legacy patch is shown on the sale map. EA identifies mitigation to protect conifer regeneration, but there are no conifers to protect. EA specified leaving all snags possible. No snags were marked although there were lots present in the unit. EA identifies mitigation for great gray owl that would provide for owl habitat. This was not included in the prescription. However, hardwoods left on site would meet the intent of this mitigation. A discussion ensued on the challenges of meeting Forest Plan LE vegetation conversions, species diversity goals, identifying good sites for active conversion, and selection/assessment of sites that are converting on their own. A forest-level assessment, perhaps including use of existing CSE, to help identify how many stands are converting naturally and how they might play into achieving objectives would be beneficial.
- **Wetlands/riparian**—Wetlands occur within the stand. In fact, stand exam plots fell in the wetlands and skewed the data so the stand was not adequately represented. Filter strips were appropriate and met guidelines. Layout and marking met riparian management objectives for buffers and tree species. Sale unit mitigation measures are adequate.
- **Soils** – Terrain is gently rolling, mostly well drained, with heavy textured till soils. Since the unit could be harvested in the dry season and trees were selected to be harvested in at least one of the wetland inclusions, impacts on soils during harvest is of interest. There is a risk of compaction and rutting in the low areas. A return to these sites for an after harvest assessment would be good.

Site #2 – Willow River Timber Sale Unit 5

Compartment 261 Stand 78

This is a 22 acre seed tree unit (changed from shelterwood). There were two different stands that were combined. Stand is dominated by paper birch but also has aspen, red pine and balsam fir in the overstory. All aspen were to be cut and birch was to be reduced to 20 sq. ft./ac. Fall seeding of white spruce, black spruce, white pine and tamarack is planned. Release will be needed after seedlings are established. Wetlands and vernal pools are scattered throughout the stand. Intent is to convert the birch stand to spruce and end up with a multi-cohort stand with conifer components.

- **Silviculture/Vegetation** – Two acres of reserve was specified. Trees were clearly marked. Desired condition should be achieved. The stand is old and needs to be treated. This is a typical aspen stand that will regenerate to aspen. Follow-up monitoring should assess whether or not the objectives were compromised by combining a couple of different stands.
- **Wildlife** – No reserve areas are shown on the sale map. Perhaps they were incorporated through sale layout, but it's difficult to know based on photo discrepancies. Lots of snags present. Did not observe any conifer to protect during harvest operations.
- **Wetlands/riparian**— Wetlands occur within the stand. Filter strips met guidelines. Layout and marking met riparian management objectives for buffers and tree species. Sale unit mitigation measures are adequate.
- **Soils** – Terrain is nearly level, soils are heavy textured and appear moderately well to somewhat poorly drained. Season of operation specified is appropriate. There is a potential risk of compaction and rutting in this unit.

Site #3 – Loony Pine Timber Sale Unit 6

Compartment 263 Stand 5

This is a commercial thin in a 75 year old red pine plantation. There is scattered red oak, red maple, white spruce and paper birch in the overstory. North Country Trail runs through the stand. Desired future condition is for a red pine with species diversity and variable density. Unit is in a mature patch and requires 50% crown cover.

- **Silviculture/Vegetation** – Treatment followed the EA and prescription. Unthinned areas were to be left along the North Country Trail. Marking looked good and is consistent with the prescription. It appeared that about 10% of the red pine will be removed.
- **Wildlife** – Snags present were not marked for removal. Jack pine and suppressed red pine are retained for black-back woodpecker habitat. There was no conifer regeneration to protect during harvest operations. Plenty of down trees/logs per acre are present. As part of large, mature upland patch it is desired to leave at least 50% canopy closure, to maintain and/or enhance variable density, and to maintain species diversity. The patch was noted in the prescription but marking guides did not specify a minimum of 50% canopy closure. Cut tree marking and residual trees were easy to recognize. Canopy closure seemed to be readily met. A variety of sizes of red pine were marked for removal, with the result being a variable residual density and a range of sizes of red pine remaining in the stand. Other species were left in the stand as desired. Good job of achieving objectives!
- **Wetlands/riparian**—The stand contains many vernal pools with steep slopes. The use of CTM equipment will help protect the filter strips. Thinning will meet objectives for buffers and long lived trees species. Mitigation measures are adequate. Recommend providing wetland identification and delineation training for layout, marking crews, and sale administrators.

- Soils – Terrain is hilly to steep, complex landform, soils are sandy loam, somewhat excessively well drained. There were one or two depressions, but at least one of them did not appear very wet and was well above the regional water table (perched). Slopes are steep but the length of slope is relatively short. Soil concern is the risk of soil erosion.

Evaluation and Conclusions:

- Overall, district personnel did a good job of implementing prescriptions, design features, mitigation measures, BMPs, and activities as planned in the EA. Check units again after harvest to see if any of these were compromised.
- A forest-level assessment, perhaps including use of existing CSE, to help identify how many stands are converting naturally and how they might play into achieving objectives would be beneficial.
- Recommend providing wetland identification and delineation training for layout, marking crews, and sale administrators.

15. Land Adjustment

Monitoring Question:

How successful is the Forest's land adjustment program in support and enhancement of Forest Plan desired conditions and objectives and contributing to efficient and effective stewardship?

Monitoring Drivers – Desired Condition and Objectives:

D-LA-1 The amount and spatial arrangement of national Forest System land within the proclamation boundary of the Forest are sufficient to protect resource values and interests, improve management effectiveness, eliminate conflicts, and reduce the costs of administering landlines and managing resources.

O-LA-1 Through various land adjustment procedures (e.g., purchase, donation, and exchange) and a landownership adjustment map, secure a land ownership pattern that supports and enhances total Forest Plan resource management objectives.

Background:

Land adjustments have not been reported since implementation of the 2004 Revised Forest Plan. There are several aspects to the program including land purchases, exchanges, and sales. Because it may take years for land adjustment processes to be completed, there typically are not major changes on a year to year basis.

Monitoring Activities:

What follows is a summary of land purchases that are complete, in process, and future possibilities as a result of third party partnerships. A brief overview of land exchanges in process and sales is also provided.

Land Purchases

Land Purchases completed:

The last land purchase by the Chippewa National Forest (CNF) was in 2006. The Forest acquired 79.70 acres of property on Sand Lake for \$491.60. The parcel is located on a 100 acre island identified as an important bald eagle nesting area. The parcel also contains additional waterfowl nesting areas, provides dispersed recreation and consolidates ownership of existing National Forest System lands. The parcel was acquired through partnership with *The Conservation Fund*, a third party.

Land Purchases in Process:

The Forest is currently working to acquire a 2.5 acre parcel on Benjamin Lake, adjacent to the historic Conservation Civilian Corp Camp Rabideau. The parcel is expected to be acquired within Fiscal Year 2010. The property is located in Beltrami County, approximately 20 miles south of the town of Blackduck, Minnesota.

The property is undeveloped and unoccupied with riparian frontage on Lake Benjamin. The 2.5 acre parcel could be developed with either recreational or residential structure improvements. The parcel is immediately adjacent to Camp Rabideau National Historic Landmark (NHL) and access to the property is though the designated Landmark. Camp Rabideau is one of only two

NHL's administered by the Forest Service in the Eastern Region, and is the premiere remaining example of a Civilian Conservation Corps Camp in the nation. As such, the foremost concern is to retain the historic character and integrity of the camp. The Lake Benjamin parcel is only 400 feet from the nearest historic building. Threats to the integrity of the camp include visual and auditory intrusions that could arise with private development of the parcel. Purchase of this parcel would avert these threats.

There are several land purchases identified for acquisition in the Forest within the next five years as funding through the Land and Water Conservation Fund (LWCF) become available. These purchases would be handled through partnerships with third parties and are discussed below.

Third Party Partnerships:

From time to time, the CNF works with third parties who partner with the Forest to acquire lands from willing landowners and convey them to the United States. Several parcels on the Forest have been identified for purchase due to their ability to enhance recreational opportunities, provide additional public access and improve aesthetic values to the Forest. With the parcels in federal ownership the land would be protected for its historical and cultural resources. Acquiring the parcels would also protect the watershed and riparian habitats surrounding the properties. Currently the CNF is working with two organizations to acquire lands within the boundaries of the Forest.

The Trust for Public Land:

The first partnership is with The Trust for Public Land (TPL). TPL is a non-governmental organization and is a vital partner for the CNF in securing parcels of land that would otherwise have been sold and possibly subdivided and developed. Parcels purchased or will be purchased by TPL and held for future acquisitions by the Forest Service include:

Stony Point is located on Leech Lake, north and east of the City of Walker within Cass County, Minnesota. The parcel was privately owned, surrounded by National Forest System lands, and threatened for private development. The parcel contains over 2,000 feet of riparian frontage on Leech Lake and is 40 acres in size. The property had been proposed for subdividing into private residential building sites. Acquiring it would eliminate the need for planned road construction over National Forest land through ½ mile of undisturbed wetlands in proximity to eagle nests, would reduce the spread of invasive plants, protect the watershed and riparian habitat and would conserve this spectacular tract isolated within National Forest ownership. The parcel is an isolated in-holding and its acquisition would eliminate the need to mark and manage several miles of boundary. The parcel is within an area containing significant Native American cultural resources. The parcel is one of the last remaining non-public undeveloped parcels with significant riparian frontage within the Walker area. Collaborators on this parcel include the Leech Lake Band.

Kremer Lake is located on Kremer Lake, north of the City of Grand Rapids and within Itasca County, Minnesota. This parcel is part of a larger block of privately owned land by Boundary Management Company. TPL is currently working to acquire the property from the private company with plans to complete the acquisition by summer of 2010. This parcel contains approximately 3,000 feet of riparian frontage on Kremer Lake, contains 22

acres and is borders National Forest Systems lands on three sides. The parcel is adjacent to the Edge of Wilderness Scenic Byway (County Road 38) and has year round accessibility to the lake. Current access to the lake is over private land.

Spider Lake is located on Spider Lake, north of the City of Grand Rapids and within Itasca County, Minnesota. This parcel is part of a larger block of privately owned land by Boundary Management Company. TPL is currently working to acquire the property from the private company with plans to complete the acquisition by summer of 2011. This parcel contains approximately 5,000 feet of riparian frontage on Spider Lake, contains 132.2 acres and would adjoin National Forest System lands to one another. The parcel is currently accessible only by foot or by water.

Leech Lake Watershed Foundation:

The second third party partner is the Leech Lake Watershed Foundation (LLWSF) is a non-governmental organization and is a vital partner for the CNF in securing parcels of land that would otherwise have been sold and possibly subdivided and developed. Parcels purchased or will be purchased by LLWSF and held for future acquisitions by the Forest Service include:

Flowerpot Bay is a water access only property on popular Ten Mile Lake near Walker, MN. It is 18 acres in size and adjoins to National Forest System lands to surround a small undisturbed bay. The bay is significant because it is part wetland and part shoreline and provides habitat to a variety of vegetation and wildlife. It contributes more than 800 feet of shoreline. Over 50% of the property is wetlands which would be threatened with development. Ten Mile Lake is a popular boating lake and undisturbed areas such as Flowerpot Bay are a rarity. Less than 5% of the lakeshore on Ten Mile Lake is National Forest owned. Habitat fragmentation, one of the four threats to the National Forest system is a threat to this bay. Acquisition of this parcel would prevent private development which would certainly occur.

Birds Eye Lake is a 160 acre parcel encompassing nearly half of the riparian frontage on Bird's Eye Lake. It adjoins to National Forest System lands on two sides. The parcel is undeveloped land containing a mixture of uplands and lowlands. The property provides habitats to several wildlife and fish species. The property was acquired several years ago by the LLWSF to protect it from private development.

Cameron is an approximately 60 acre parcel with frontage on Sand Lake and Bird's Eye Lake. It adjoins National Forest System lands on the west side. The parcel is undeveloped land containing a mixture of uplands and lowlands. The property provides habitats to several wildlife and fish species. The LLWSF is working to acquire the property from a private party to protect it from private development.

Land Exchanges

There have been no land exchanges completed on the Forest since 2004, when the current Forest Plan went into effect. There are two land exchanges in process.

Land Exchanges in Process:

The first exchange in process, involves 160 acres of National Forest System lands for 160 acres of State Tax Forfeit lands administered by Cass County. The parcels have been appraised with the Federal parcel valued at \$200,000 and the County tax forfeit parcel valued at \$176,000. The County has agreed to pay cash for the difference in value. The federal lands are isolated parcels with no adjacent federal ownership. The Federal lands are located in the General Forest management designations and conveyance of the federal land is allowed by the CNF Forest Plan direction. The County tax forfeit parcels are four individual 40 acre parcels isolated and adjacent to existing National Forest System lands. The County tax forfeit parcels are located in the General Forest management designations and acquisition of the parcel will consolidate federal ownership. Both the Federal and County lands will maintain the same management for timber purposes. The exchange deeds for the properties are being drafted with closing expected to occur before in the summer of 2010.

The second exchange in process involves an exchange with the City of Walker. Both parcels are located in the City of Walker, Cass County, Minnesota. This exchange involves 1.31 acres of National Forest System lands for 1.15 acres of city owned land. A statement of approximately equal value has been completed for the parcels and they have been determined to be approximately equal. The federal parcel is an isolated tract located across the street from the Walker Ranger Station. The parcel is partially encumbered by a city managed storm water pond system with an active special use permit with the City of Walker. Authority to convey the parcel was granted through the Interior and Related Appropriations Act, known as the Pilot Conveyance, referred below. The City owned parcel is located within the Walker Ranger Station property and is surrounded on three sides by National Forest System lands. The Forest Service currently has a 100-year lease on the property for a federally owned building with 80 years remaining on the lease. The public hearings are currently occurring by the City. The exchange is expected to be completed by end of summer 2010.

Sales

The Forest can obtain approval to sell National Forest System Lands through special authorities including the Forest Service Facilities Realignment and Enhancement Act of 2005 (FSFREAA), Pilot Conveyances, State-wide or National Forest Special Acts, Small Tract Act, land exchange, or authorities to resolve title conflict and certain management problems. The various types of conveyances are described below.

Pilot Conveyance:

The Interior and Related Appropriations Act, known as the Pilot Conveyance, permitted the CNF to sell structures that were no longer needed for present or future management needs. The CNF's pilot conveyance parcels with authority to sell consist of the four sites: the former Cass Lake Ranger Station, the storm water parcel in the City of Walker, the Walker District Ranger house in the City of Walker and the West Branch parcel in the City of Walker. The Walker District Ranger house was sold in 2007 for \$92,300 and reduced National Forest System lands by 0.69 acres. The storm water parcel in the City of Walker is in progress as a land exchange project, mentioned above under land exchanges.

The Cass Lake Ranger Station conveyance is in progress. The CNF vacated the parcel more than 10 years ago. The Leech Lake Band of Ojibwe (LLBO) has been occupying the site for nearly 10 years for their Tribal Police Headquarters. The Band has made extensive improvements to the property to conform it for their use as a police station. CNF and the LLBO have been partnering to sell this parcel directly to the Band. CNF has recommended that the LLBO acquire the front portion of the Ranger Station for fair market value. The back portion of the property would be declared surplus and transferred to Government Services Administration (GSA) to be ultimately transferred to the Bureau of Indian Administration (BIA) to be held in trust for the Band. Because the parcel is valued at more than \$150,000, oversight by the National Lands Adjustment Team (NLAT) in Washington DC was required. The CNF is currently working with the Regional Office regarding the proposal and the NLAT review.

The West Branch parcel is located within the City of Walker. An exchange with a local township had been proposed but has since dissolved due to lack of interest by the township. It has been determined that the CNF will retain this parcel temporarily during the construction of the new Walker Ranger Station. The West Branch property includes a large garage which will be used to temporarily store equipment and property from the Walker Ranger Station while the new facility is being constructed. It is expected the parcel could be sold in 2012 or 2013.

Small Tract Application Conveyances:

The Secretary of Agriculture is authorized to sell lands to resolve certain land ownership disputes associated with encroachments and land management problems associated with mineral survey fractions and road rights-of-way. Using the Small Tract Application (STA) authority, the Forest has negotiated four sales to resolve encroachment type title claims. The four STA sales were all determined to involve inadvertent encroachments. The total acreage for the four sales reduced the National Forest System land ownership by 4.96 acres.

There is currently one STA conveyance in process on the CNF. This STA involves a building encroachment on a property north of Deer River, Minnesota which recently foreclosed and is now owned by Woodland Bank of Remer, Minnesota. The encroachment includes a metal pole shed.

Adjustment of Titles Act of July 8, 1943(PL 78-120):

Occasionally there are instances where deed descriptions may overlap, property boundaries are inaccurate or deeds contain defective or erroneous information. In order to resolve these types of disputes, the documents need to be corrected through a corrective quit claim deed using the Adjustment of Titles Act of July 8, 1943 authority. The CNF has resolved one title claim since 2004 through this authority. The total acreage of National Forest System land ownership reduced was 0.10 acre.

Evaluation and Conclusions:

There are no Decade 1 objectives or projected conditions for land adjustments. Instead, the CNF works to secure an ownership pattern that enhances long term resource management objectives. At the end of 2009 the National Forest land ownership within the Chippewa National Forest was 666,616 acres, which is 51 percent of the land area within the boundaries of the Forest (does not include 303,129 acres of water bodies within the Forest). In July of 2004, when the Forest Plan

was approved, the National Forest land ownership was 666,542 acres. During the past five years, land adjustment resulted in a net gain of approximately 73.95 acres to the Forest. The increase in acres reflects the acquisition of the Starr Island parcel and the reduction due to the Small Tract Act Conveyance parcels. The outlook is for limited funding that is focused on a select few high priority tracts. Pending land adjustment cases will consolidate CNF lands, resulting in ownership patterns that better meet resource management objectives.

Recommendations:

- Continue to work with third party partners to acquire parcels which enhance the Forest.
- Educate District staff on land acquisition and exchange program regarding which parcels meet the Forest Plan objectives.

16. Minerals

Monitoring Question:

Are mineral exploration, development and production avoidance or mitigation measures effective and being followed as recommended in project designs?

Monitoring Drivers – Desired Condition and Objectives:

D-MN-1 Exploration and development of mineral and mineral material resources is allowed on National Forest System land.

D-MN-2 Ensure that exploring, developing, and producing mineral resources are conducted in an environmentally sound manner so that they may contribute to economic growth and the national defense.

Background:

This element has not been reported on since the implementation of the 2004 Revised Forest Plan. The Chippewa NF does not have the exploration and hardrock minerals that occur elsewhere in northern Minnesota. Most of the Forest mineral activity is tied to sources of sand and gravel.

Monitoring Activities:

There are no large mineral material contracts on the CNF. It is possible the Forest could be approached by private companies for mineral material exploration but it is unlikely. There are several small sand and gravel special use permits issued on the Forest. The CNF continues to sell and provide sand and gravel to the public. Several government agencies have minimal or free use to CNF sand and gravel, depending on the project. Small material sales are issued to the public. The CNF has an inventory of 42 gravel pits. The materials from these pits are used primarily by the CNF for road maintenance, construction, timber sales and other project administration. Production and sales records were not kept prior to 2006. Record summaries are listed below.

Table 37. Production and sales records by FY.

	FY 2009		FY 2008		FY 2007		FY 2006		Total	
	Yards	Value	Yards	Value	Yards	Value	Yards	Value	Yards	Value
Private Sales	22,532	\$50,945	3,570	\$10,535	35,959	\$47,486	24,290	\$33,863	86,351	\$142,829
Free Use	12	\$15	No data	No data	No data	No data	No data	No data	12	\$15
CNF Use	2,670	\$3,338	No data	No data	No data	No data	No data	No data	2670	\$3,338
									89,033	\$146,203

Pit Plans:

The majority of the CNF gravel pits need updated pit plans. Several of the pits have no plans to allow additional expansion or have never had a pit plan developed. Due to limited budgets, the CNF will develop the pit plans on a case-by-case basis as needs arise.

Reclamation:

Reclamation of several gravel pits has been accomplished in the past and several more pits have been marked as needing restoration. Currently there are 11 pits identified for closure and reclamation work. The Forest Plan indicates that land disturbed by mineral development activities will generally be reclaimed as soon as practical. The pits identified for closure have been idle for several years without reclamation work completed due to limited funds. Many of the pits need additional work other than reclamation including control of noxious weeds. The forest botanist is working on forest-wide direction for noxious weed eradication, prevention and control. The Forest is in need of additional funding to close pits.

Expansion/Exploratory Drilling:

There are several pits that have been recommended for expansion or exploratory drilling. The Jesse Pit was expanded in 2004. This pit provides gravel to the Forest and other users. The Marcell Pit on the Deer River District is recommended for expansion. The Environmental Assessment was completed and signed in 2007.

Evaluation and Conclusions:

Monitoring site visits during active exploration projects have shown that companies are implementing their project in accordance with their operating plans. No notices of non-compliance were issued. Monitoring for multiple years after reclamation will continue to document effectiveness after the projects are completed. This will assist the CNF with developing a better understanding of what measures are effective and what additional measures are needed to protect surface resources.

Recommendations:

The CNF needs to focus attention to the gravel pits on the Forest.

- Pit plans need to be updated and developed for several pits, exploration in the pits needs to be done, reclamation in eleven (11) pits needs to be completed.
- Continue noxious weed program initiated by botanist to reduce or eliminate infestation within pits.
- If the Forest does not update the pit plans or do the exploration, gravel needed for CNF projects will have to be acquired from other sources other than CNF gravel pits.
- Additional funding for gravel management needs to be explored.

17. Special Uses

Monitoring Question:

Does Forest Management of forest products, recreation/wilderness, and other special use permits meet Forest Plan and agency direction?

Monitoring Drivers – Desired Condition and Objectives:

O-SU-1 Generally provide for utility transmission corridors and communication sites...

O-SU-2 Ensure that exploring, developing, and producing mineral resources are conducted in an environmentally sound manner so that they may contribute to economic growth and the national defense.

O-SU-3 Continue to administer a recreation special use program providing for recreation uses associated with the existing resorts, residences, camps and other recreation special uses...

O-SU-4 Manage permits for recreation residences by providing for the continuation of existing permits and re-issuance of expiring permits.

O-SU-5 Permit existing organization camps to remain under special use permit as long as their operations and management continue to meet the stated purposes of the permit...

D-REC-5 The Forest continues to administer a recreation special use permit program providing recreation opportunities at existing resorts, recreation residences, and camps.

D-TS-5 Private and non-NFS landowners have reasonable access to their land.

Background:

This element has not been reported on since the implementation of the 2004 Revised Forest Plan. There are several types of special use permits granted on the Chippewa National Forest.

Monitoring Activities:

A summary of the types of permits issued within the Forest follows.

Recreation Residence permits grant permittees authority to place privately owned cabins on National Forest System lands. The Forest plan allows for the existing recreational residence permits to remain on National Forest System lands but does not allow for new permits to be issued. There are 286 recreation residence permits on the Forest that have been in place since 1960. There are certain permit restrictions such as not being allowed to homestead the property and restrictions for improvements. The permits are within summer home groups with access to several lakes within the Forest, including Leech Lake, Cass Lake, Pike Bay, Lake Winnibigoshish, Cut Foot Sioux, Little Cut Foot Sioux and North Star Lake.

Resort permits grant permittees authority to place privately owned facilities on National Forest Service lands. The Forest Plan allows for permittees operating resorts to enhance recreational opportunities on the Forest. There are 10 resort permits on that Forest that have been in place

since 1960. The permits have restrictions and require liability coverage. The permits are located on several lakes including Leech Lake, Cass Lake, Pike Bay, Lake Winnibigoshish, Cut Foot Sioux, Little Cut Foot Sioux and North Star Lake.

Organizational Camp permits grant permittees authority to operate summer camps on National Forest Service lands where the federal government owns the improvements on the property. The Forest plan encourages the use of summer camps for youth programs to enhance recreational opportunities on the Forest. There were 10 organizational camps within the Forest between 2004 and 2009. Currently there are 8 active organizational camp permits.

Utility permits grant permittees authority to place utilities under or over National Forest Service lands. The Forest Plan allows for utilities to be placed on Forest Service land when no other locations are available. Between 2004 and 2009, there were 20 permits issued and 50 existing permits. There are ten large utilities which cross National Forest Service land including two Enbridge Pipelines one of which is being constructed in 2010. This pipeline construction project extended from Canada through North Dakota and Minnesota and ended in Superior, Wisconsin. A large overhead transmission line is currently being proposed to cross the Forest. An analysis that evaluates three proposed routes across the CNF is currently underway. The final route has not been selected. Several small utility permits are granted over NFS land for fiber optic cable, television lines, telephone lines, water mains, sewer mains, etc.

Road permits and easements grant authority to utilize or build access roads to private property over National Forest lands. The Forest Plan allows for roads to be placed on Forest Service land when no other access is available. Between 2004 and 2009, there were 20 permits issued and 50 existing permits in place.

Other permits granted on the Forest include, Outfitter and Guide permits, bicycle and running race events, sled dog races, communication towers and several other permits granted for a specific purpose. The Forest Plan allows for permits to be granted on National Forest land when consistent with the Forest Plan direction and when the proposed use cannot be accommodated on non-NFS land. Between 2004 and 2009, there were approximately 86 other permits issued.

Evaluation and Conclusions:

Monitoring site visits show that the majority of the permittees remain in compliance. Several of the recreational residence permits were not granted 20 year permit renewals until certain compliance issues were brought to standard, such as septic, well and other miscellaneous issues. In 2004, a Special Use Permit Handbook Supplement was drafted for recreational residence permits. This handbook allowed for more effective management of the cabin permittees as well as provided an outline for the permits to use when requesting improvements or changes to the sites. A resort supplement is currently under draft to assist with the management of the resort permits. Monitoring will continue for all permit types to document permit compliance throughout the term of the permits. This will assist the CNF with developing a better understanding of what measures are effective and what additional measures are needed to protect surface resources.

Recommendations:

- The Forest needs to finalize the resort supplement in order to improve the management of the resorts.
- Several expired utility and road permits need to be renewed or closed.
- Overall the Special Use Permit program appears to be running within the guidelines of the Forest Plan.

18. Air Quality

Monitoring Question:

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

Monitoring Driver – Desired Condition and Objectives:

D-AQ-1 Air on the forest is of high quality so that: 1) ecosystems are not impaired by pollutants originating in the air, 2) the health of visitors, residents, and employees are not impaired, 3) poor visibility does not impair scenic quality, and 4) other air quality related values are not adversely affected.

D-AQ-3 Air emissions from National Forest management actions do not degrade natural resources or uses of the Forest.

Background:

The Chippewa National Forest (CNF) is interested in the effects of air pollution on Forest resources. Sources of air pollution are found outside the Forest boundaries and from within. Notable sources within the CNF include wildfires and certain CNF management activities, particularly prescribed burning. Air pollution over the CNF is a regional scale phenomena caused by many sources from many states. In comparison, air pollution from CNF management activities represents a very small source to the Forest's annual air pollutant concentrations, with the exception of the largest prescribed burning projects but even these only affect air quality over a limited area and for a short time period.

The CNF does not directly support any permanent air quality monitoring on the Forest, other than hosting a precipitation monitoring site at the Marcell Experimental Forest. The Forest has access to portable smoke monitors, if needed, for any of its prescribed burns. These monitors were not used on the CNF during 2009.

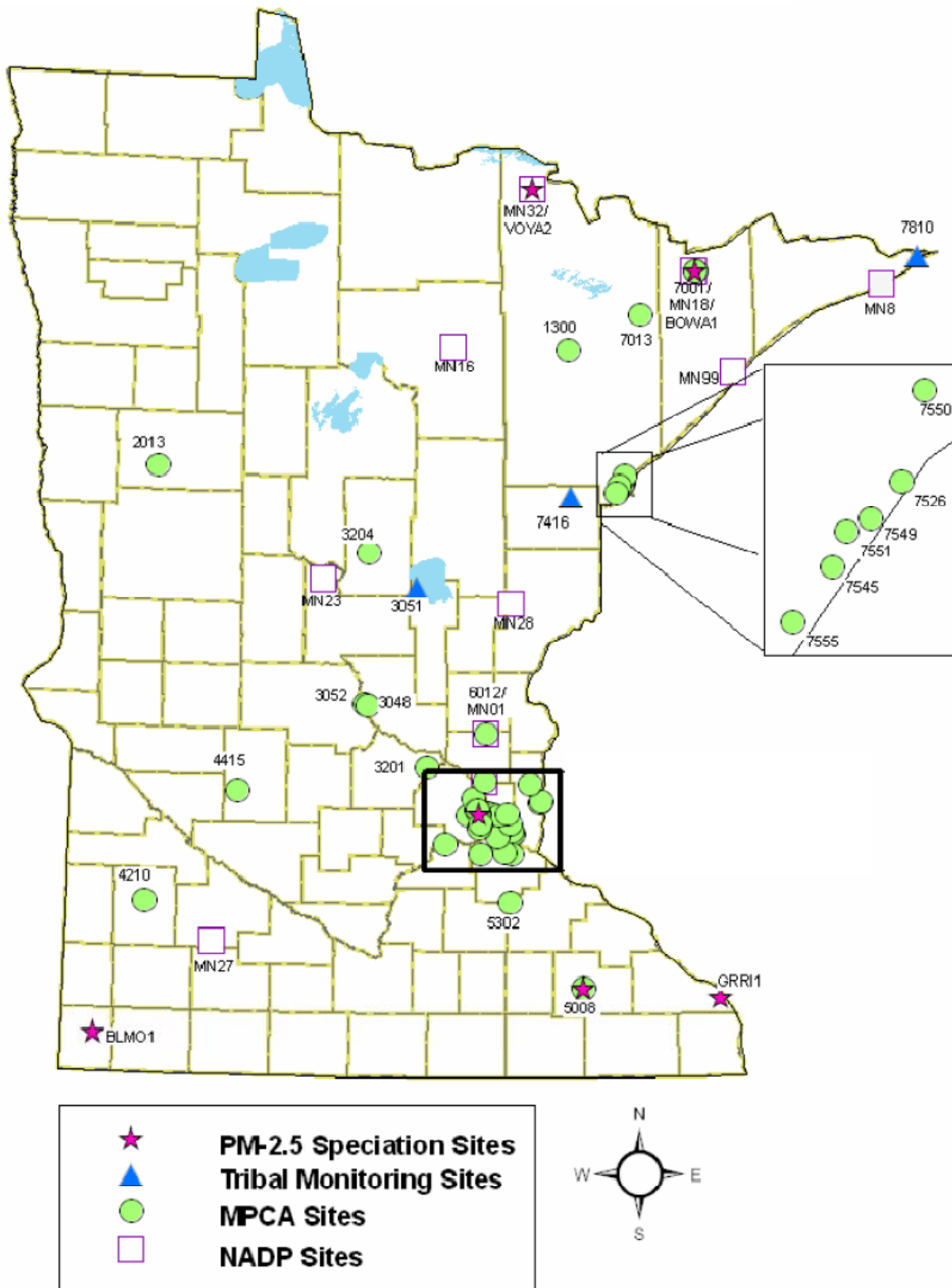
Monitoring Activities:

Despite not doing any monitoring of its own, the CNF has access to other air quality monitoring data gathered by other agencies. Figure 18.1 (MPCA 2008) shows locations where air and precipitation quality is measured in Minnesota. Air quality in rural Minnesota generally does not vary considerably unless there are large industrial sources nearby. There are only a few sources near the CNF: Minnesota Power Boswell in Cohasset, UPM in Grand Rapids, and a lumber and a board plant near Bemidji. All these sources are fairly small except for Boswell but it has a very tall stack which makes it more of a regional pollutant source. Therefore nearby monitors can characterize the conditions on the CNF very well.

Referring to the map, the most appropriate CNF air monitors are the Marcell monitor for precipitation quality, and the monitor in Brainerd for fine particulates and ozone. Another monitor operated by the Mille Lacs Band of Chippewa at Mille Lacs is also useful for fine particulates because the sampling methodology it uses is slightly different than the fine

particulate monitor at Brainerd. The Mille Lacs data can be legally compared to EPA's standards while the data from the one at Brainerd can only be used qualitatively. The advantage of the Brainerd monitor is that it provides continuous data while the Mille Lacs monitor only provides data for every 1 in 3 days.

Figure 18.1 Air quality monitoring sites in Great Minnesota



Data from continuous sites like Brainerd are part of the Air Quality Index (AQI) network and are reported on the MPCA’s webpage in realtime (<http://aqi.pca.state.mn.us/index.cfm>). In Minnesota, four pollutants are used to calculate the AQI: ground-level ozone, sulfur dioxide, carbon monoxide and fine particles (PM2.5). The two pollutants of most concern in Minnesota are ozone and PM2.5. Ozone, also called smog, is only a problem in warm weather and so is only monitored from April through September. PM2.5 is monitored year-round. Not all pollutants are monitored at each location. While the AQI in Minnesota cities rarely reaches the “unhealthy” or red range, many citizens are affected by air quality in the orange range, or “unhealthy for sensitive groups” (USG). The AQI translates each pollutant measurement to a common index, with an index of 100 set to reflect where health effects might be expected in sensitive populations. An AQI value of 100 generally corresponds to the National Ambient Air Quality Standard for the pollutant, which is the level EPA has set to protect public health. The pollutant with the highest index value is used to determine the overall AQI.

Evaluation and Conclusions:

To judge progress in implementing the Forest Plan the report will assess the current level of air pollutants in comparison to standards - where they exist, and also look at trends over time.

Figure 18.2 Air Quality Data from AQI Network for 2007 (MPCA 2008)

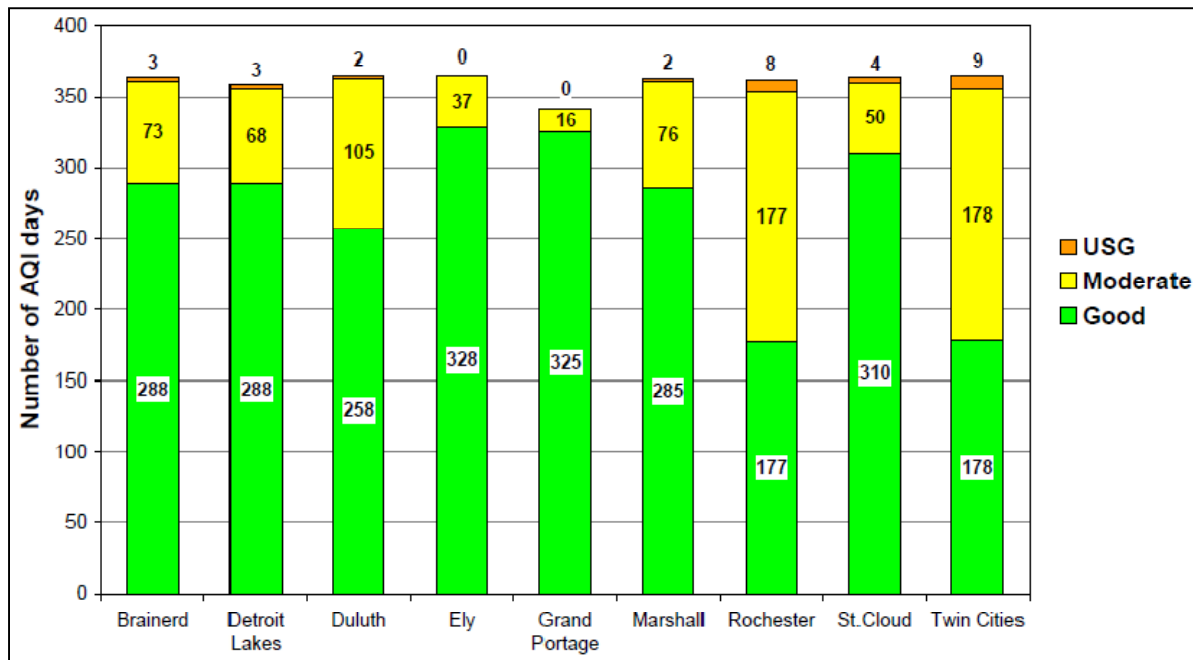


Figure 18.3 Annual Fine Particulate Data from EPA-Certified Network (MPCA 2008)

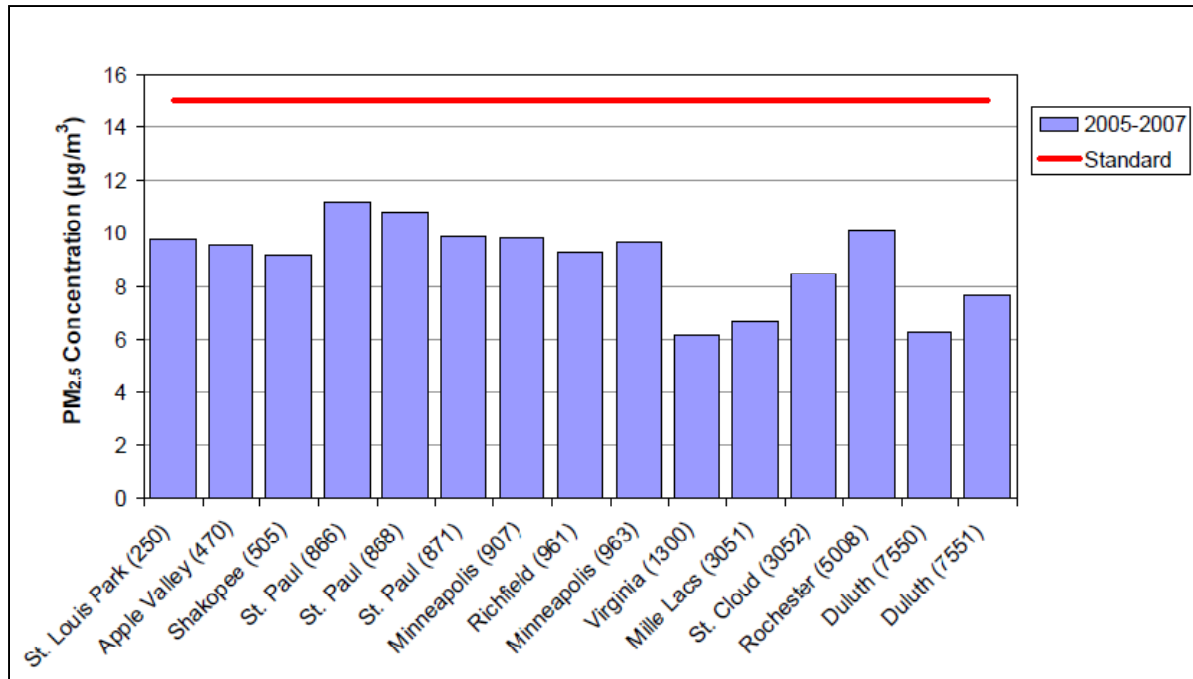


Figure 18.4 Fine Particulate Matter in Minnesota (MPCA, 2009).

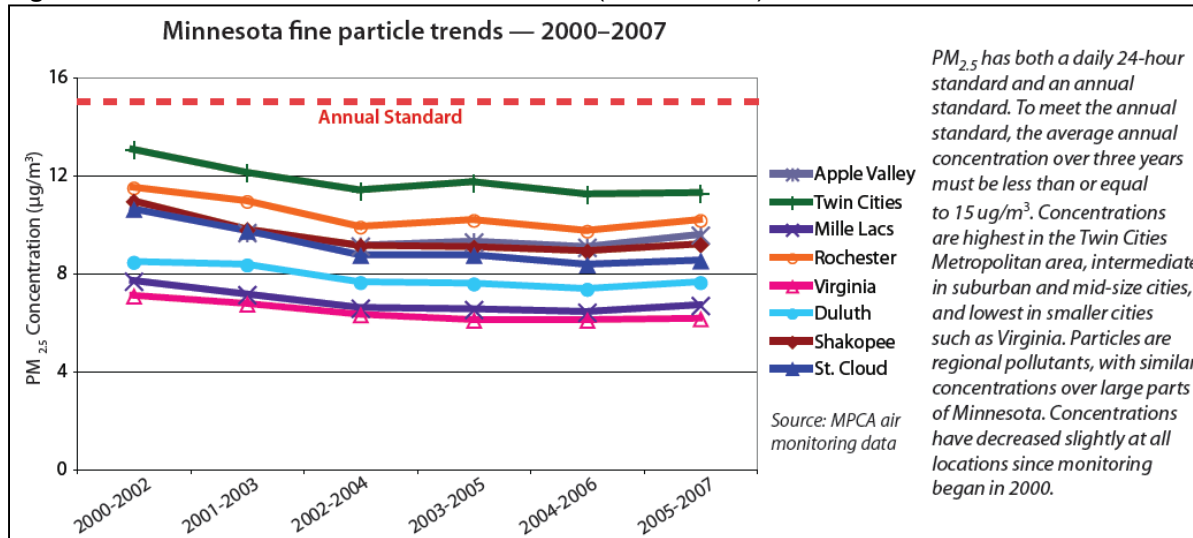
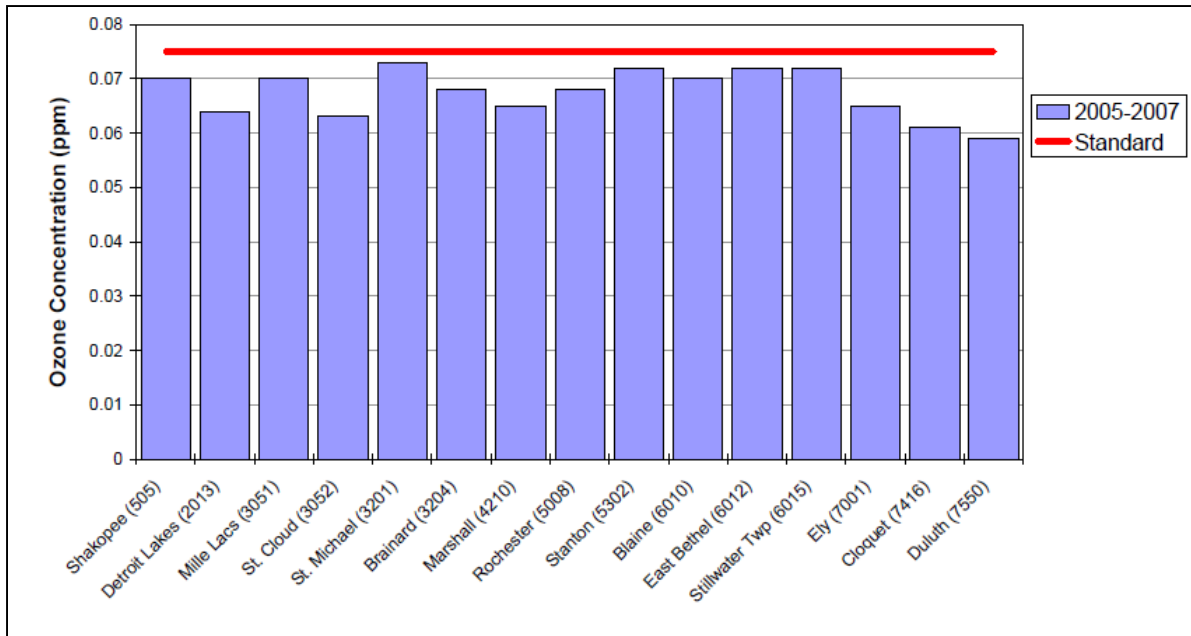
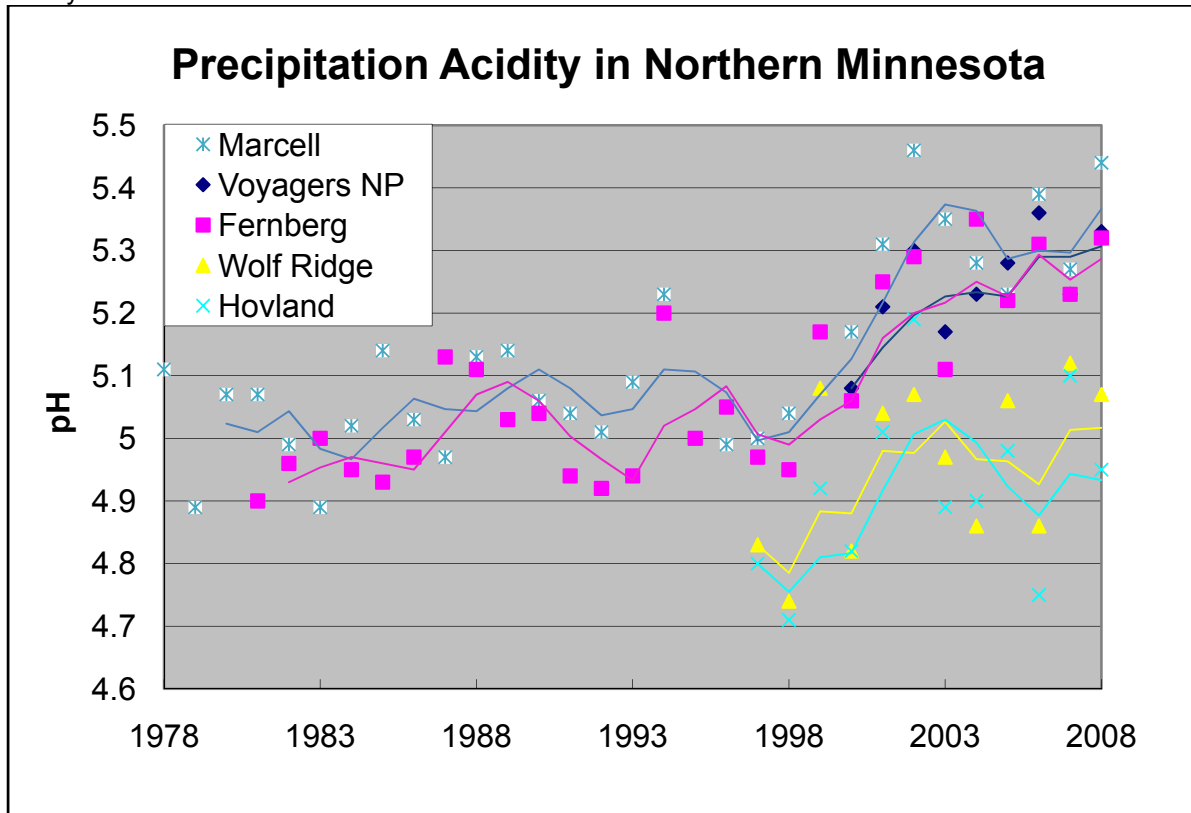


Figure 18.5 8-Hour Ozone Data (MPCA 2008)



Figures 18.2-18.4 show that in general air quality is better in areas outside the Twin Cities area, especially those in the northern part of the state near the CNF such as at Brainerd. Figure 18.2 shows that the sites with the most days of unhealthy (USG) air are Rochester and the Twin Cities. As mentioned above the AQI data shown in Figure 18.2 is mainly a combination of continuously measured fine particulate and ozone data with the highest one at any particular time determining the AQI value. Figures 18.3-18.5 are data from EPA-certified monitors used to determine compliance with pollutant-specific EPA health standards. It can be seen that all sites are below the current EPA standards. EPA recently proposed lowering both of these standards. The annual fine particulate standard could drop to 10 ug/m³ and the ozone standard could drop to 0.060 ppm. If it occurred the fine particulate standard change may not affect many sites but the ozone change could put most of the State in exceedance of that standard. This situation is termed nonattainment and requires the State to develop an emission control plan to lower the pollutant that exceeds the standard.

Figure 18.6 Precipitation acidity in Northern Minnesota. A lower pH value indicates an increase in acidity.



One of the longest continuous environmental monitoring data sets is the national precipitation chemistry network. Figure 18.6 shows that precipitation acidity has been fairly flat since 2003, although the previous seven years (since about 1998) showed a great improvement or lessening of acidity. An increase in pH corresponds to a decrease in acidity. There is no EPA standard for precipitation acidity although a “natural” pH value is thought to be about 5.6. Sulfur is the dominant chemical in precipitation that causes acidity. The major source of sulfur emissions is power plants.

Figure 18.7 Particulate matter in Virginia.

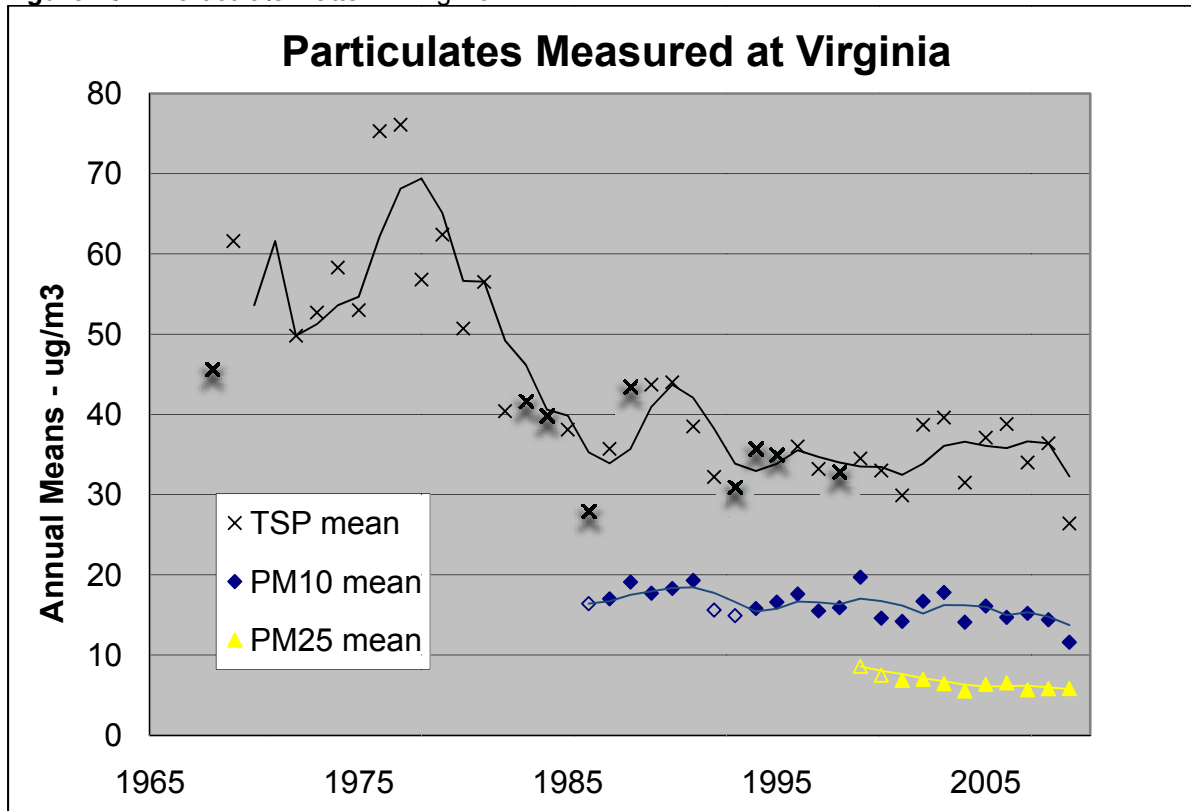


Figure 18.7 looks at total particulate matter. Particulate matter is classified according to its size. The smallest size, known as fine particulate matter is the most dangerous because it can get deep in the lungs and cause both lung and heart problems. Fine particulates also scatter light and cause haze.

It is difficult to clearly display long term trends for particulate matter because over the years monitoring was done for different fractions of particulate matter based on what the EPA health standard was at the time. Fine particulate matter (also known as $\text{PM}_{2.5}$) monitoring has only been done for the past 10 years since the EPA $\text{PM}_{2.5}$ standard was first promulgated in 1997. Before that EPA was concerned with a broader size range of particulate matter known as coarse, or PM_{10} . Monitoring for PM_{10} has been ongoing since about 1986 because EPA's standard for PM_{10} was first promulgated in 1987. Before this time, monitoring was done for an even larger fraction of particulate matter known as total suspended particulate (TSP).

To assess truly long-term trends in particulate matter we are fortunate to have near the Forest one of the longest running air monitoring sites in the state at Virginia. This site has been in operation since 1968. Looking at Figure 18.7 the trend in TSP, which has been monitored since 1968 shows a decrease until the mid 1980s and then another slight decrease in the early 1990s and a plateau since then. The smaller fractions of particulate matter do not have as long a record but

show general decrease (see also the sites Figure 18.4). Since larger particulate matter settles out faster and therefore does not travel as far, the TSP values should be more affected by local emission sources while the smaller fractions, especially PM_{2.5} should be affected more by regional emission sources.

Sources

Sulfate is the largest portion of fine particulate measured near the BWCAW and Voyagers NP. The same can be said for the CNF since fine particulates are regional pollutants and do not change over these small distances. Power generation is the dominant source of sulfur dioxide emissions which forms sulfate in the atmosphere. Sulfate in the atmosphere can form particles that cause haze or can be washed out as acid rain. Sulfate is a dominant chemical responsible for acidifying the precipitation. On a regional scale, power plants are the only significant source of sulfur dioxide emissions. Regional and national scale emission control programs (such as the Acid Rain Rule) that affect sources physically located within Minnesota and many states away can have a positive effect on air quality and other associated ecosystem characteristics such as water quality and mercury levels in fish on the CNF.

For its Regional Haze Plan the MPCA did an analysis of fine particulate pollution in the BWCAW (MPCA, 2009b). They found that the major contributing sources in 2018 are projected to be power plants. Power plants remain a large percentage contributor in 2018, as they were in 2002, partially due to major projected reductions in nonroad and onroad emissions (car and trucks). When looking at the location of the sources affecting fine particulate in the BWCAW the MPCA concluded that sources within Minnesota make it the largest contributing state, accounting for about 28% of the fine particulate.

Table 38. Percentage Contributions by State to Light Extinction ⁷³

	BWCAW	VNP	Isle Royale ⁷⁴
Minnesota	28%	31%	13%
Wisconsin	10%	6%	16%
Illinois	6%	3%	8%
Iowa	8%	7%	8%
Missouri	6%	4%	5%
North Dakota	6%	13%	4%

In its 2009 Air Quality Report (MPCA, 2009) MPCA recently hired Desert Research Institute (DRI) to investigate the sources of fine particles in Minnesota. DRI compared the results of several modeling approaches to estimate fine particle sources using monitoring data, directly measured emission profiles from likely sources and meteorological data. The study found differences in fine particle concentrations and sources between urban and rural locations and between southern and northern Minnesota.

On average, urban concentrations of fine particles are 30 percent to 60 percent higher than rural concentrations. Concentrations in rural areas in northern Minnesota are about half of the concentrations found in rural southern Minnesota. Ammonium sulfate and ammonium nitrate make up at least three-quarters of average rural fine particle concentrations. Smaller amounts of

rural fine particles were from biomass combustion and soil dust. Mobile source contributions to fine particles were small at these rural sites. A major difference between northern and southern fine particles is that there is significantly less ammonium nitrate and slightly less ammonium sulfate in the north compared to the south. The sources of ammonium sulfate are power plants and ammonium nitrate is anything that burns fuels such as cars, trucks and industrial boilers.

In summary, background air quality on the Forest can be seen to be affected by broad categories of air emission sources, with about 75% from states and regions outside Minnesota. Northern Minnesota is currently meeting EPA standards for those air pollutants that have them, although currently proposed revisions to some of these standards put that conclusion in doubt for the future. It is important to understand the background air quality conditions because it is to this that project scale impacts are added.

Recommendations:

Based on current understanding, air pollution from sources outside the Forest are not degrading forest ecosystems, human health or enjoyment of forest resources except for the following areas: visibility and mercury deposition.

Visibility is categorized as impaired at legally protected (Class I) areas in the state such as the BWCAW and Voyagers National Park. Even though the CNF does not have legally protected vistas it has many large lakes where visibility is an important recreational attribute. The MPCA's regional haze plan describes the important sources of visibility impairment to the BWCAW and Voyagers NP (and by extension the CNF), none of which are related to National Forest management activities.

Mercury is a chemical that is of concern because it can concentrate in food chains to levels that can damage nervous systems, especially those that are developing such as those of young children and fetuses. Once released to the environment mercury is never destroyed, but can cycle through many different pools (such as the air, soil, water, plants, animals), and change chemical forms, until it is eventually buried in deep soils and sediments (EPA 1997).

Mercury contamination of fish is a well documented problem in Minnesota. Because of wide-spread mercury contamination, the Minnesota Department of Health advises people to restrict their consumption of large sport fish from all lakes and rivers. More than 95 percent of the mercury in Minnesota surface water comes from the atmosphere. In 2007, the EPA accepted Minnesota's mercury Total Maximum Daily Load (TMDL) plan that concludes that atmospheric mercury deposition must be reduced by 65 percent to achieve compliance with aquatic mercury standards. Many water bodies on the CNF are listed as impaired by MPCA due to mercury contamination of fish.

Since 1996 a number of sites in Minnesota, including Marcell, have monitored the mercury content of precipitation. Trends have been flat over the monitoring period (Monson 2009), which has made determining the cause of the recent increase in fish mercury concentrations problematic. Monson (2009) recently analyzed Minnesota's fish-mercury data and found a year (1992) that divided a period of generally decreasing concentrations (1982 to 1992) from one of increasing concentrations (1992-2006). The reason for this change is not immediately obvious

although climate change factors, such as increases in temperature, rainfall intensity, runoff, and water level fluctuations, could be important.

Some recent concern has been expressed by some interest groups regarding a category of air pollutants called air toxics. The MPCA has done some air toxics monitoring in the past but it started a statewide air toxics monitoring effort in 2010 and are planning to run it for one year. After the data is collected and analyzed it should provide a good picture of the background levels of air toxics on the Forest.

Air quality impacts measured on the CNF are dominated by sources outside the CNF. For example, in the Minnesota Pollution Control Agency's (MPCA) Regional Haze plan all air emission sources in Minnesota are responsible for only 28% of the fine particulate pollution that cause visibility impairment at the BWCAW, and northeast Minnesota is responsible for half of that (<http://www.pca.state.mn.us/publications/aq-sip2-12.pdf>). For mercury, the MPCA estimates that the state is responsible for 10% of the deposition that contributes to elevated concentrations of mercury in fish (<http://www.pca.state.mn.us/publications/wq-iw4-01b.pdf>).

References:

MPCA. 2008. Annual Air Monitoring Network Plan for the State of Minnesota, July 2008

MPCA 2009. Air Quality in Minnesota: Emerging Trends, 2009 Report to the Legislature, January 2009

MPCA 2009b. Regional Haze State Implementation Plan, December 2009

Monson, B.A. 2009. Trend Reversal of Mercury Concentrations in Piscivorous Fish from Minnesota Lakes: 1982-2006, *Environmental Science and Technology*, 43 (6), 1750-1755.

III. RESEARCH AND STUDIES

1. Goblin Fern (*Botrychium mormo*)

Goblin fern, *Botrychium Mormo*, is a small species of moonwort found in rich hardwood forests in the northern portions of Minnesota. It is a Regional Forester Sensitive Species for Region 9. The “Conservation Approach for Goblin fern, *Botrychium Mormo* W.H. Wagoner” was completed December 2001.

One of the information needs identified for the Goblin Fern was to investigate the response of this species to changes in overstory vegetation and winter logging as would occur in some typical forest management practices. One of the known colonies of goblin fern on the Forest was chosen. The site selected for this study is south of Lower Sucker Lake (Township 144 North, Range 30 West, Section 3), where goblin fern colonies occur on either side of Forest Road 2135. The colony on the west side of the road (14 acres) was chosen as a control and the east side (17 acres) was chosen for treatment of a typical hardwood management practice.

Data collection began in 1995 when both the control and treatment stands were extensively searched for goblin ferns and each plant location was marked. Plots were established to include five or more individual goblin ferns representing sub-samples of the population. Plot data collection has continued annually through 2007. Soil moisture measurements were added to the data collection in 1999 and these measurements have continued annually in conjunction with monitoring of the goblin fern population.

A timber harvest contract was awarded to implement the treatment. About 1/3 of the treatment stand was harvested early in 2006, but operations were suspended due to excessive soil disturbance. The remainder of the treatment was completed by the end February 2007 under adequate conditions for soil frost (>4” in depth) but less than the prescribed 12” of snow depth. A total of 377 trees were removed during the harvest including paper birch, yellow birch, balsam fir, black ash, basswood, and sugar maple species. This was thought to result in approximately 70% crown closure throughout the managed stand.

Post-treatment plot data collection began during the 2007 growing season and concluded following the 2009 season.

Monitoring Results

Table 1 displays the mean annual goblin fern population within the monitoring plots by year for the treatment and control stands. There was a total count of 20 individuals in the treatment stand in 2009. This is less than the previous three years, but within the range observed since 2000.

Table 2 displays the mean annual soil moisture for the treatment and control stands. Drought conditions existed during the summers of 2006 and 2007. This is reflected in the lower soil moisture readings taken during those years relative to years prior to 2006.

The soil moisture in the treatment site has exceeded the control site in all years since 2002. The goblin fern population in the treatment and control sites has been variable in these same years. For 2009, soil moisture on both the control and treatment site were near the high end of the range observed since 2002. This reflects more normal rainfall amounts in 2009.

Additional Work Planned or Needed

A final report will be completed in early 2011.

Table 1. Goblin Fern Administrative Study annual count of individual plants within sampling plots, summed by year.

	YEAR														
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Control (n=11)	104	273	117	39	36	27	34	37	30	44	22	22	19	23	25
Treatment (n=10)	97	239	101	53	58	36	33	25	15	28	15	29	27	27	20

Table 2. Goblin Fern Administrative Study yearly Average Volumetric Soil Moisture within sample plots.

	YEAR												Site average
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		
Control site average (n=11)	32.5	37.5	(no data)	27.0	23.9	27.5	26.8	21.3	21.0	27.8	28.2	27.4	
Treatment site average (n=10)	31.9	33.4	(no data)	29.9	28.0	27.8	27.5	23.0	23.3	29.4	29.2	28.3	

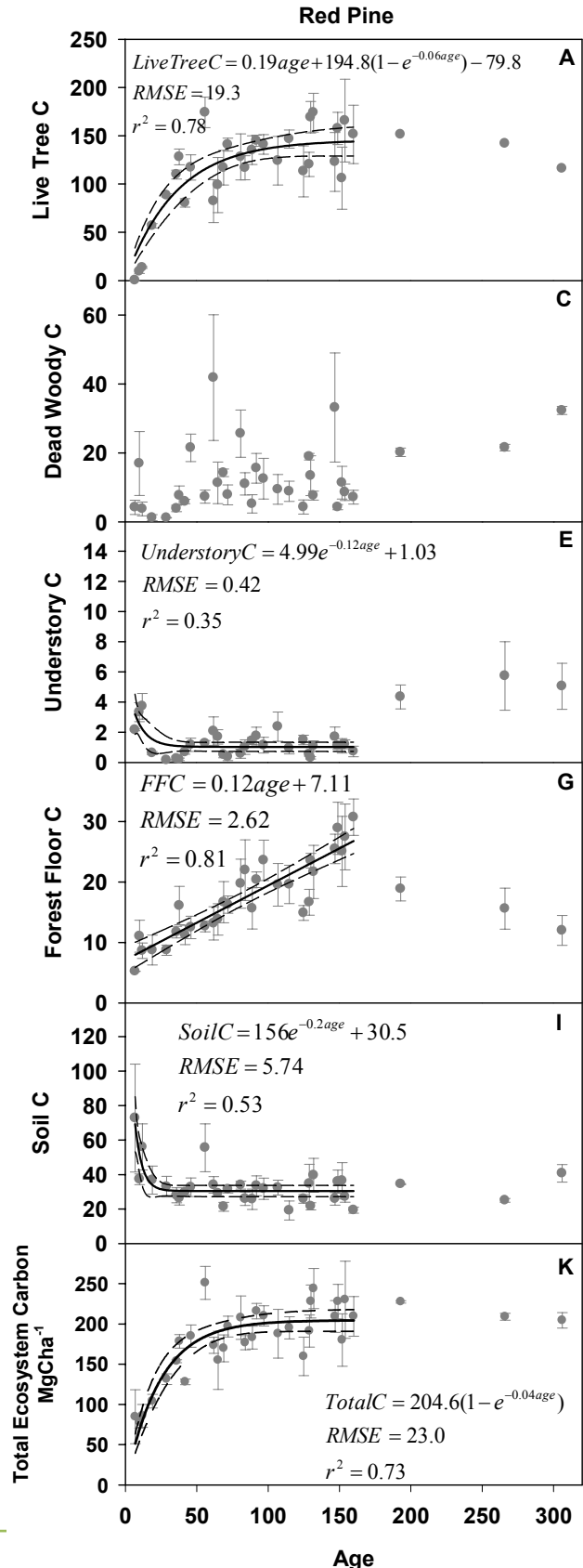
2. Continuation of Red Pine studies on the Chippewa National Forest

This research is being conducted by the Northern Research station in Grand Rapids. It is a combination of two studies initiated in 2008 – stand and cohort structures of old-growth red pine forests of northern Minnesota and the relationship between stand age and carbon storage in the Chippewa National Forest.

Previous work has characterized carbon storage and cycling on managed red pine stands, and stand structure and complexity on old-growth red pine stands. We are working to integrate these two existing studies to ask three important forest management questions that are both related to climate change:

- 1) **How does carbon storage and cycling differ between managed and unmanaged (old-growth) stands?** Forest ecosystems play an important role in the global carbon cycling, and increasing carbon storage in forests is one strategy for *mitigation* of climate change. Although we are strengthening our understanding of how carbon storage relates to stand age and alternative silvicultural prescriptions, the general question of how managed stands differ from unmanaged stands remains unclear. With a relatively small amount of effort, we can add measurements on the old-growth red pine stands that we have already established in previous work and compare carbon storage on these stands with managed stands examined in other studies.

Progress: We have completed the field measurements, laboratory analysis and data compilation to summarize total ecosystem carbon storage on three old growth red pine stands. In addition, we have integrated these



results into our existing dataset of ecosystem carbon storage among sites that represent a chronosequence of stand ages (Figure at right – three stands older than 200 years are the old growth stands that this project added to the chronosequence). The results indicate that, for overall total ecosystem carbon storage and most individual carbon pools, old growth stands are similar to stands in the 100-150 year old range. In old growth forests, carbon stored in dead wood and understory plants was slightly higher while carbon stored in forest floor was slightly lower.

- 2) **Does the greater forest complexity in the old-growth stand make it less vulnerable to weather fluctuations (which are expected to increase with climate change?)** Enhancing ecological complexity is one potential strategy for *adaptation* in the face of climate change, because ecosystems with greater complexity are expected to display greater resilience in the face of changing conditions. However, few studies have directly tested the hypothesis that greater complexity is related to greater resilience. We will use dendrochronological methods (identical to those used in ongoing studies of old-growth stands) to construct a historical record of growth over the past several decades in several managed stands. By relating these records from both managed and unmanaged stand to past climate fluctuations we will quantify both the direction and strength of the relationship between climate and growth. Stands that display greater growth fluctuations in response to weather variability have lower resilience and lower capability to withstand both short- and long-term changes in climatic conditions.

Progress: We have completed the tree coring for 20 red pine stands that represent a range of stand ages within and around the Cutfoot Experimental Forest. These cores are currently being analyzed to determine individual tree growth from ring widths. Stand-level growth for the past several decades will be estimated as the sum of all trees within the plots representing a stand and will be compared against weather records to characterize the relationship between weather fluctuations and forest growth in both the managed younger forests and the unmanaged old-growth forests.

- 3) **Do trees in old-growth red pine stands form single or multiple age cohorts?** The range of tree ages can be used as one measure of stand complexity. As above, forest stands consisting of a range of tree ages may display greater resilience to changing environmental conditions. The 20 managed red pine stands on the Cutfoot Experimental Forest exist as single cohorts, that is, all trees are the same age, or nearly so. However, the cohort structure of Minnesota's old-growth red pine stands had not previously been studied in any detail. If these stands consist of more than one cohort, we can compare the climate–growth responses of trees of different ages, thereby assessing the degree of resilience afforded by having a range of ages (and hence sizes and structures).

Progress: The field and laboratory work for this part of the study is complete. We evaluated six remnant old-growth sites, one of which was within the Chippewa NF (Pine Point RNA). Two of the six sites showed primarily single-cohort red-pine age structures, two showed double cohorts, and two showed double cohorts with sporadic additional recruitment (Figure below). In the next phase of this project, we will determine if the link between climate and

tree growth varies by tree age, thus allowing us to truly assess resilience within these old-growth stands.

Contributed by John Bradford (218-326-7105) and Shawn Fraver (218-326-7133), USFS Northern Research Station, Grand Rapids, MN

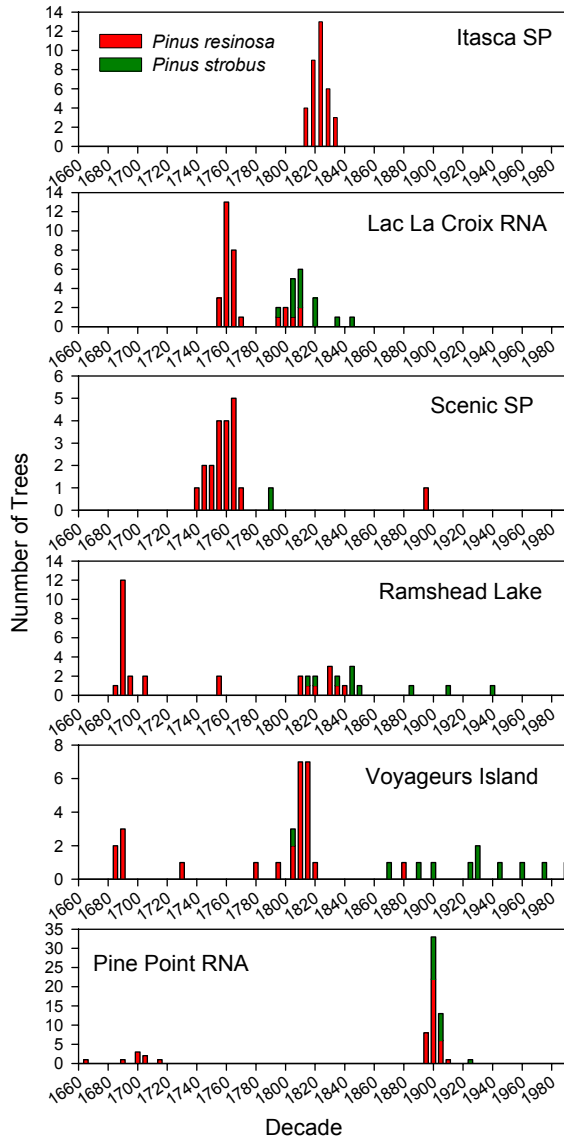


Figure: Cohort structure of six remnant old-growth red pine sites in northern Minnesota, showing a range of ages and age structures between sites.

3. Long-Term Soil Productivity Study

As part of a national long-term soil productivity study, soil porosity and organic matter are being experimentally manipulated on large plots to determine the impacts of such manipulation on growth and species diversity of aspen stands on the Chippewa National Forest.

Research was done in two areas on the Chippewa National Forest. The first study area is on the Marcell Experimental Forest on the Marcell Moraine Landtype Association and it was started in 1991. The second study area is called the Chippewa site and that is located within the Guthrie Till Plain Landtype Association. That treatment began in 1993. Test plots were prepared to determine the effects of soil compaction and organic matter removal on soil properties and growth of aspen suckers; associated species and herbaceous vegetation on stand development. On the Marcell and Chippewa sites the study involved winter harvest of 70 year-old aspen growing on loamy soils.

The following combinations of treatments were applied to the sites:

- 1) Whole tree harvest (trees lifted off the site with little or no ground disturbance from machinery) or bole only removal.
- 2) No soil compaction, moderate compaction or heavy compaction.
- 3) Forest floor removal or no forest floor removal

The 15th year sampling was completed in 2005 and 2006 for the Marcell pilot study site. The vegetation was sampled for the 15th year at the Chippewa site in 2007 and the soil was sampled in 2008. The University of Minnesota partially sampled the plant species in 2009 at the Chippewa site. They expect to finish vegetation sampling this field season.

Northern Research Station located in Grand Rapids, Minnesota hired a post-doctoral researcher, Rick Voldseth, to summarize the 10-year data. In Sept. 2006, Rick presented his preliminary findings during an office presentation and field tour to the Chippewa National Forest and other interested agencies. The final report was delivered to the Northern Research Station, but is not yet available.

4. Non-native Invasive Earthworm Research

Dr. Cindy Hale, earthworm researcher at the University of Minnesota Duluth, conducted research near Ottetail Point on the northeast side of Leech Lake. Dr. Kyungsoo Yoo from the University of Delaware and Dr. Anthony Aufdenkampe from the Stroud Research Center in Pennsylvania received a grant to work with Dr. Hale on a specific research project. The title of the study is "Acceleration of Inorganic Nutrient Release and Mineral-Organic Matter Associations by Soil Bioturbation along an Earthworm Invasion Chronosequence." Previously they collected soil samples and in September, 2009 they returned to collect worm specimens, install equipment to collect soil samples and install water sampling equipment. Soil water samples will be collected on a regular basis. They are working in cooperation with the Northern Research Station and the Leech Lake Band of Ojibwe.

Cindy Hale and Becky Knowles et al, received a grant for 2010 focused on *Reducing human-mediated spread of non-native earthworms in vulnerable northern hardwood forests*. The long-term goal of this integrated proposal is to reduce substantially the rate of spread of damaging, invasive earthworms in northern hardwood forests.

IV. ADJUSTMENTS OR CORRECTIONS, AND AMENDMENTS TO THE FOREST PLAN

The Chippewa National Forest Land and Resource Management Plan (Forest Plan) was revised in accordance with the 1982 Planning Rule. Since 2000 a number of planning rules have been in effect. As a result of litigation, the 2000 Planning Rule was reinstated in December 2009. The 2000 Planning Rule allows us to make non-substantive corrections or adjustments to the revised Forest Plan using a process called “administrative corrections”. Administrative corrections (36 CFR 219.31(b)) may be made at any time and are not plan amendments or revisions. Administrative corrections include the following:

- (1) Corrections and updates of data and maps,
- (2) Updates to activity lists and schedules as required by 219.30 (d)(1) through (6)
- (3) Corrections of typographical errors or other non-substantive changes; and
- (4) Changes in the monitoring methods other than those required in a monitoring strategy.

In FY 2009 there was one non-significant site specific amendment (Amendment 2) and one administrative correction. The amendment consisted of an extension of the southern boundary of the North Winnie Semi-primitive non-motorized to the Third River Road. The change provides the public and agency officials with a well defined boundary that is easily identifiable on the ground. This amendment was included in an environmental assessment and decision for the *North Winnie SPNM Boundary Change and Trail Project*. The administrative correction (Administrative Correction 10) changed a boundary to Sunken Lake candidate Research Natural Area. This boundary was incorrectly mapped and adjusted to be consistent with the historical boundary contained in documentation from the Northern Research Station.

Table 39. Listing of Forest Plan amendments, corrections, or updates.

Type of Change	Date	Content
Amendment 1	11/15/2007	Change to Guideline on prohibited OHV use (G-ORV-1)
Amendment 2	06/04/2009	Change to North Winnie SPNM Boundary
Administrative Correction 1	08/17/2006	Change to Glossary definitions
Administrative Correction 2	08/30/2006	Change to Monitoring Plan
Administrative Correction 3	08/18/2006	Change to Timber Management Guideline (G-TM-7)
Administrative Correction 4	08/18/2006	Change to Heritage, Recreation, and Access Guideline (G-WSR-7)
Administrative Correction 5	08/18/2006	Correction to Executive Summary Table
Administrative Correction 6	08/18/2006	Change to Watershed Health, Riparian Areas and Soil Resources Table (Table G-WS-8a)
Administrative Correction 7	08/18/2006	Change to SIO Map
Administrative Correction 8	09/18/2006	Change to National ORV Definitions
Administrative Correction 9	09/14/2007	Change to Proposed and Probable Practices
Administrative Correction 10	08/10/2009	Change to Boundary of Candidate Research Natural Area, Sunken Lake
Errata 1	08/18/2006	Change to Record of Decision (ROD)

The amendment, full corrections, as well as the corrected pages from the set of Plan documents

can be found at: <http://www.fs.usda.gov/chippewa/> Land & Resources Management/Planning. We encourage people to use this resource for accessing the most up to date information on amendments and administrative corrections. Future corrections or amendments will also be listed in the Chippewa NF *Schedule of Proposed Actions* which is distributed quarterly. We will continue to provide opportunity for public involvement at the project level and during any substantive changes to the Forest Plan.

V. LIST OF PREPARERS

The following people collected, evaluated, or contributed time and/or data for the FY 2009 Monitoring and Evaluation Report.

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