Monongahela
National Forest

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Monitoring & Evaluation Report
Fiscal Years 2001, 2002, and 2003

This publication is available in large print upon request.

www.fs.fed.us/r9/mnf/environmental/environmental_index.htm

INTRODUCTION

This report describes accomplishments and monitoring results for Fiscal Years 2001, 2002, and 2003 as they pertain to the 16 goals of the 1986 Land and Resource Management Plan for the Monongahela National Forest and an updated discussion of the Payment in Lieu of Taxes (PILT):

Goal	Goal Statement
I	Manage the spectrum of recreation opportunities that exist on the Forest with an emphasis on recreation activities that require a large land area, such as hiking or hunting, and facilities to support that use.
II	Manage the Spruce Knob-Seneca Rocks National Recreation Area in accordance with the Act of September 28, 1965, for multiple resource uses with an emphasis on semi-primitive recreation uses.
III	Manage National Forest Wilderness in order to preserve the Wilderness attributes for which the areas were designated.
IV	Manage habitat to help recovery of threatened and endangered species on the Forest. Protect sensitive species and unique species until their populations are viable. Improve the diversity of plants, animals, and stand conditions with an emphasis on the habitat needs for wild turkey, black bear, and associated species.
V	Maintain open areas of National Forest land for forage, wildlife, and visual purposes.
VI	Manage the vegetation on the Forest, according to sound professional procedures in order to provide a sustained yield of timber, benefit other resources, and support the local economy with concern for environmental protect and cost efficiency. Both silvicultural systems and all harvest methods will be used, however, evenaged management will predominate in order to provide long term wildlife and timber quality benefits. Long rotation ages will normally be used to achieve large tree sizes. Conifers will be managed in mixed hardwood stands where possible.
VII	Provide stable supply of Forest products to dependent wood using industry. Encourage the development of secondary wood using industries in West Virginia. Encourage cable harvesting technology in the logging industry.
VIII	Make minerals available for exploration and development consistent with other appropriate resource uses and protection of the environment. Emphasis will be on energy producing minerals.
IX	Improve the social welfare of citizens through education, training, employment, and public safety programs.
X	Improve the efficiency and effectiveness of National Forest Administration through land acquisition, exchange, or donation.
XI	Manage the Forest so that it is an economically efficient unit of the National Forest system.
XII	Develop and maintain a high level of open communication and understanding with the public.
XIII	Cooperate with, and coordinate plans with, other Federal, State, and local agencies and with private groups to improve the management of natural resources and reduce potential conflicts.
XIV	Permit use of National Forest land by others, under special use or lease authorities, that is compatible with National Forest goals and objectives and will contribute to the improved quality of life for local residents.
XV	Construct and maintain a transportation system that will allow efficient management and safe public use of National Forest lands.
XVI	Protect natural and cultural resources of the Forest and the health and safety of visitors from damage or degradation.

I encourage you to review this report and contact us if you have any questions. We welcome your involvement in the management of the Monongahela National Forest.

CLYDE N. THOMPSON

Forest Supervisor

25% and PILT Payments
Monongahela National Forest

The following table summarizes revenue sharing payments (25% Fund and Stabilized Payments) and Payments-in-Lieu of Taxes (PILT) for Monongahela National Forest (MNF) System lands, by county, for each year from FY1983 to the most current year available.

Payments from the **25% Fund** and **Stabilized Payments** are made to the State of West Virginia for redistribution to counties in proportion to the number of acres of National Forest System land within each county. These payments are limited to use for schools and roads by the Act of May 23, 1908, except that Public Law 89-207 (4/28/65), which established the Spruce Knob-Seneca Rocks National Recreation Area, authorized their use for schools, roads, and county government in counties containing National Recreation Area (NRA) lands (Grant and Pendleton). West Virginia Code 20-3-17 and 20-3-17a allocate these funds 80% for schools and 20% for roads in all counties except Grant and Pendleton, where 65% is allocated for schools and 35% for general county purposes (none for roads).

The 25% Fund or Stabilized payments are also made for Hampshire, Hardy, Pendleton, and Monroe Counties for lands in the George Washington and Jefferson National Forests. These payments are not included in the table.

The original 25% fund was made up of 25% of National Forest receipts resulting from timber cut, grazing, recreation fees, land uses, and minerals. Timber sale receipts include the value of roads constructed by timber purchasers, and deposits for sale area betterment under provisions of the Knutson-Vandenburg (KV) Act of 6/9/30. Beginning in FY 1993, payments for receipts from Federal minerals were made directly by the Minerals Management Service (MMS) (National Energy Bill of 1992.) Payments made by MMS are not included in this table.

In October of 2000 the Secure Rural Schools and Community Self-Determination Act was passed. It offered counties the option of receiving the traditional 25% payment based on revenue, or taking a “stabilized” annual payment based on the highest three years of payments for the year 1986 thru 1999. In West Virginia seven of the ten counties within the Monongahela opted to take the stabilized payment, beginning in FY2001. These counties are Greenbrier, Pendleton, Pocahontas, Preston, Randolph, Tucker and Webster. Thus, the following table represents a mix of payment plans, based on county decisions, beginning in FY 1987.

How counties spend their funds under the stabilized (or “full”) fund option, and when and how counties can opt for a different payment plan, are spelled out in the legislation. It is too complex to elaborate on here.

Payments-in-Lieu of Taxes (PILT) are paid to the State of West Virginia for redistribution to the local governments of counties containing any of several specific types of federal lands, including National Forests. Counties receive payments in proportion to the amount of acreage of National Forest System land within each county. These payments are made under the provisions of the Payments-in-Lieu of Taxes Act of 1976 (PL-94-565). The rate of payment is established for “entitlement acres” (lands on tax rolls at time of acquisition.) PILT payments can be used for any governmental purpose. Additional payments are also made for a period of five years for lands acquired for National Forest Wildernesses. There are a number of special provisions of the law, most of which are not pertinent to West Virginia.

The actual amount of PILT payments in any year is subject to adequate Congressional appropriation of funds. Although the payments are authorized to increase over time, funds have not been appropriated to fully fund the authorized amounts in recent years.

Many counties in West Virginia, including several with the MNF, receive PILT payments for lands administered by the National Park Service, Corps of Engineers, or US Fish and Wildlife Service.

Payments are based on acres in Federal ownership at the beginning of the fiscal year for PILT and at the end of the fiscal year for the 25% Fund, according to their respective enabling legislations. This results in some minor discrepancies between the entitlement acres used to figure the payments for PILT and those used for the 25% Fund, as lands are often acquired in the middle of a fiscal year.

Table 1 – Payment in Lieu of Taxes for the Monongahela NF (2001-2003)

FY	25% PILT	BARBOUR	GRANT	GREENBRIER	NICHOLAS	PENDLETON	POCAHONTAS	PRESTON	RANDOLPH	TUCKER	WEBSTER	TOTAL MNF	$/AC*
01	25%	7.00	12,992.00	207,057.00	15,291.00	123,563.00	630,795.00	8,003.00	411,481.00	202,803.00	134,628.00	1,746,620.00	1.92
	PILT	519.00	13,695.00	114,262.00	39,021.00	107,285.00	348,747.00	4,401.00	228,781.00	114,469.00	74,466.00	1,045,646.00	1.08
02	25%	6.32	11,498.80	208,713.64	13,533.41	124,551.97	635,841.45	8,066.72	414,772.43	204,425.01	135,704.71	1,757,114.46	1.81
	PILT	546.00	17,695.00	120,204.00	46,420.00	127,537.00	366,883.00	4,630.00	241,268.00	120,422.00	78,339.00	1,123,944.00	1.16
03	25%	10.03	41,644.29	211,218.20	21,456.13	126,046.60	643,471.54	8,163.52	419,749.69	206,878.11	116,733.19	1,795,371.30	1.97
	PILT	626.00	23,195.00	137,640.00	53,095.00	125,606.00	420,100.00	5,302.00	276,606.00	137,890.00	89,702.00	1,269,762.00	1.31

Oil and Gas Leasing and Gas Storage Revenue to the U.S. Treasury

Oil and gas leasing and gas storage returns revenue to the Federal government from rents and royalties. The table below shows the returns in thousands (rounded to the nearest thousand) of dollars to the U.S. Treasury from MNF oil and gas lease rents and royalties for the years indicated.

Table 2 – Oil and Gas Receipts for the Monongahela NF (1987-2003)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1999	2000	2001	2002	2003
Total dollars from oil & gas leasing and gas storage	788	674	655	787	854	435	416	296	421	278	557	658	412	1161
Oil and gas rents and royalties	No data	564	580	709	831	345	280	224	No data	207	No data	No data	177	712
Gas storage	No data	110	75	78	23	90	136	72	No data	71	No data	No data	235	449

Fluctuations in returns correspond with fluctuations in gas leasing and development activity. For example, leases expire at the end of the lease term if they have no production, and until re-leased, there is no rent paid. Fluctuations in natural gas prices may cause operators to change the flow or production rate from existing wells to maximize their revenue, and since royalties are paid on produced gas, fluctuations in royalty returns occur. A general explanation for a jump in revenue is that as a number of gas wells become connected to a pipeline system, royalties are then paid on the produced gas instead of a fixed per acre rent. All these factors can act singularly or interact and be responsible for yearly or short term variation in returns to the U.S. Treasury from oil and gas leasing.

Returns shown for 2002 and 2003 warrant additional explanation. The increase in gas storage returns is due to settlement reached in a dispute over storage field royalties. The large increase in returns from rents and royalties is primarily due to the bonus bids received on leases competitively sold in 2003.

I. Manage the spectrum of recreation opportunities that exist on the Forest with an emphasis on recreation activities that require a large land area, such as hiking or hunting, and facilities to support that use.

Management action(s) taken to achieve this goal:

In West Virginia, the National Forests, and to a lesser extent State lands, are almost the exclusive providers of public primitive or semi-primitive non-motorized (SPNM) recreation opportunities. The MNF manages five Wildernesses totaling over 78,000 acres or about 9% of the Forest. The Forest also manages 324,400 acres of the Forest in Management Area 6.1 and approximately 125,000 acres in Management Area 6.2. Both of these areas emphasize SPNM recreation opportunities and represent almost 50% of the Monongahela National Forest System land base. The Forest offers an extensive non-motorized trail system consisting of over 800 miles of hiking, biking, and horseback riding opportunities. Many of these trails travel through back-country and wildernesses to provide visitors the opportunity to experience the remote/ primitive recreation opportunities that these areas can provide. There are 29 developed campgrounds providing 940 campsites and 14 picnic areas as well as hundreds of dispersed campsites to accommodate overnight visitors. The Forest also operates a Q Permit System which provides vehicle access to disabled hunters on designated roads across the Forest.

2001 -2003 Overall Program Accomplishments:

*** Developed sites** – The Forest manages 29 campgrounds (940 campsites), 14 picnic areas, 24 observation sites, 1 National Scenic Highway, 79 trailheads, 4 fishing sites, and 1 cabin rental. Budget allocations along with Fee Demonstration project collections and volunteer help allowed us to manage the above areas to a full service operations and maintenance level 44% of the time during the open season. All critical health and safety standards were met 100% of our 150-220 day operating season.

*** General Forest Areas** – There are approximately 60 concentrated use areas (areas where high general dispersed recreation activities occur) and 44 developed dispersed camping areas across the Forest. All of these areas were managed to meet all operation and maintenance standards an average 38% of the time over the three year period with critical health and safety standards being met 100% of the 250 day managed season

*** Wilderness** – One of five wildernesses on the Monongahela National was managed to standard (20% capability),

*** Trails** – An average of 164 miles of our existing 828 mile trail system was maintained to standard (20% capability)

The National Forest Recreation Use Survey was completed on the MNF in 2003. The results of this statistically accurate survey will be available by the end of 2004. This survey is part of a National effort to gather statistically valid recreation use information from all National Forests across the country. Information collected includes demographic, social, geographic, social, and economic statistics about visitors to the National Forest. This is an on-going recreation use survey that is completed once every five years on each National Forest. Results of the 2003 monitoring effort for the MNF will be available by the end of 2004.

Table 3 - Recreation construction projects completed (developed and/or dispersed and/or trails)

Project Name	2001	2002	2003
Spruce Knob Lake Retaining Wall	X		
Cranberry Mountain Nature Center Doors and Windows Replacement	X		
Leading Ridge Trail Bridge Abutment Replacement	X		
Accessible Vault Toilet Replacement at Summit Lake,	X		

Project Name	2001	2002	2003
Tea Creek Campground and north Bend Picnic Area			
Tea Creek Well Rehabilitation and Hand Pump Replacement		X	
Old House Run Roof Replacement		X	
Gatewood Group Campground Rehabilitation		X	
Potomac River Access Site		X	
Smoke Hole picnic area accessible Picnic Tables (5 each) and Pedestal Grills (5 each)		X	
Woodbine Accessible Hand Pump Installation			X
Cranberry Campground Well Rehabilitation and Hand Pump Replacement			X
Buffalo Lake Accessible Fishing Pier and Concrete Boat Launch			X
Blue Bend Picnic Shelter Rehabilitation			X
Accessible Restroom Replacements at Aldridge, Big Rock, Day Run, and Stewart Recreation Areas			X
Accessible Stewart Recreation Area Restroom, Dump Station and Water Fountain Construction and Replacement			X
Cranberry Mountain Nature Center Roof Replacement			X
Cranberry mountain Nature Center Electrical Upgrades			X
Big Bend Restroom Roof Replacement 94 buildings)			X
Spruce Knob lake Campground Solar Water Pump			X
Gandy Creek Dispersed Site Rehabilitation			X
Red Creek Grill Replacement (12 grills)			X
Red Creek Bear Resistant Garbage Containers (14 each)			X
Red Creek Accessible Picnic Tables (12 each)			X
Jess Judy Accessible Picnic Tables (9 each) and Pedestal Grills (3)			X
Accessible Trail Construction, Cranberry Mountain Nature Center			X
Trails Maintenance (miles to standard)			164

Changes in management of recreation sites

There have been no changes in the ROS classification of any developed sites. Five campgrounds that are not economically feasible to be operated by concessionaires were added to the Fee Demonstration Program in 2003. (The Fee Demonstration Program allows user fees collected to remain on the Forest to be used for the operation/ maintenance and improvements for that site rather than being returned to the general treasury fund),

Recreation areas managed under concession or fee demonstration

All fee sites on the Monongahela are either Concessionaire Operation or Fee Demonstration. Five campgrounds were added to the Fee Demonstration Project in 2003. They include Bear Heaven, Laurel Fork, Pocahontas, Red Creek, and Spruce Knob Lake Campgrounds.

Discontinued maintenance or closed sites

Hopkins Knob Lookout and Spruce Knob picnic areas were closed in 2002 but re-opened in 2003.

The MNF has not discontinued maintaining any dispersed sites on the Forest although current budget allocations only allow for our dispersed campsites to be managed to a full-service level standard 38 % of the season. Critical health and safety standards were met for 100% of the annual operating season.

Dispersed site rehabilitation was completed in 2003 for sites along Gandy Creek to mitigate soil and water resource concerns. Although a few sites were closed most were rehabilitated and motorized and horse use was restricted. Day use and tent camping is still permitted and campers or trailers can park in constructed parking areas.

Table 4 - Recreation projects funded by cooperative grants

Project	2001	2002	2003
Highlands Scenic Highway Parking Lot Construction		X	
Tea Creek Meadow Trail Construction		X	
Summit Lake Accessible Vault Toilet, Fishing Pier and Boat Dock Replacement		X	
Tea Creek accessible Vault Toilet		X	
North Bend Picnic Area Vault Toilet Replacement		X	
Rail-Trails (Tea-21 Grants)			X
Recreation Opportunity Spectrum Mapping Participating Agreement with West Virginia University (WVU)			X
Social Economic Assessment Participating Agreement with WVU			X
Cliff Scaling Soldiers of West Virginia			X
Buffalo Lake Fishing Pier and Boat Launch			X

Meaningful measures data migration into the infrastructure database

The Developed Recreation Site Module data was migrated in 2002; trails and general forest areas (GFA) are scheduled to be migrated in 2004-2005.

Recreation strategy and agenda for the MNF

The Forest Recreation Vision was presented and approved (tentatively based on any needed Union discussion/ negotiation) at the November 2003 Leadership Team Meeting. The preferred alternative “Special Places and Open Spaces” prioritizes recreation sites and opportunities across the Forest and provides a mix of developed sites, general forest areas, wildernesses, trails, interpretive programs, and recreation special use programs that will be managed to a very high quality standard. Other areas will be managed to meet critical health and safety standards.

Table 5 - Miles of trail constructed, reconstructed, or maintained in 2001, 2002, and 2003

Activity	2001	2002	2003
Trails maintained to full service standard	165	158	161
Trail construction in miles	15.4	0.5	1
Trail reconstruction in miles	0	0	1
Trail relocation in miles	0	0	0
Trail abandonment	0	0	0

Activity	2001	2002	2003
Bridge installation	1	1	2

Force Account, SCSEP, and Volunteers both individuals and organizations support the Forest trails maintenance and improvement program.

Volunteer groups are concentrating their efforts on routine trail maintenance. The American Hiking Society completed a variety of North Zone Trail Projects in 2001, 2002, and 2003. An Americorps Trail Project was completed on the North Zone in 2001 and the Fernow Crew assisted with ice damage cleanup on numerous North zone Trails

Partnerships and Grants are also being used to complete trail construction and reconstruction. Examples include the West Virginia State Trails Association work on the Allegheny Trail and Rails-to-Trails on the West Fork Trail.

Trail information and signing

Our Trail Recreation opportunity Guides are almost completed. We anticipate having these available either hard copy or web based in 2004/ 2005. These guides will provide a trail map, general information regarding each trail including; access, length, grade, trail description, and areas of interest.

Maintenance or expansion of partnerships to enhance program delivery of recreation programs such as at the Seneca Rocks Discovery Center or for Forest trails

The MNF is currently working with Pendleton County (Seneca Rocks Discovery Center) and Richwood Chamber of Commerce (Cranberry Mountain Nature Center) to maintain and expand programs and customer service at our visitor center. We continue to work with numerous trail groups and individuals to complete needed trail maintenance and improvement projects. In 2003, three Tea-21 projects were approved on and adjacent to the MNF, two through partners and one direct grant to the USDA – Forest Service.

Recreation use projections on the MNF

Although we have not been reporting visitor use since 1996, visual monitoring indicates that recreation visitation to the Forest continues to increase annually. Actual recreation use figures based on the National Visitor Use Monitoring survey was conducted in 2002 and 2003. The results are expected to be available by the end of 2004.

Backlog of facility improvements

Our current deferred maintenance and capitol improvement needs are as follows:

	Deferred Maintenance	Capitol Improvement
Recreation	$2,600,000	$760,000
Trails	$ 860,000	$228,000

Note: When costs are updated to reflect recent condition survey results, it is likely that our trails deferred maintenance and capitol improvement costs will increase significantly.

Maintenance of adequate, functional, and pleasant toilet facilities

The MNF is replacing old vault toilets and restrooms on an annual basis with accessible and pleasant facilities. Implementation has varied from four to eight facilities annually.

Upgraded campsites, visitor centers, and other facilities

See Table 4 for a list of projects. We are also replacing minor facilities (picnic tables, fire rings, lantern hangers, etc.) and rehabilitating campsites with Fee Demonstration and Concessionaire off-set dollars.

Monitoring conducted in 2001, 2002, and 2003, and results:

The National Recreation Visitor Use Monitoring was completed in 2003. The results are expected to be available at the end of 2004.

Additional monitoring associated with recreation opportunities

A Social Economic Assessment was completed in 2003 through a partnership with WVU. This assessment describes the people and communities within and adjacent to the MNF as well as the issues, special places and visitor (local and non-local) expectations of the Forest.

Visitor Comment Cards were provided at most developed facilities. Comments received range from visitors really enjoying the amenities provided at a specific facility, to improvements that would make their stay more enjoyable. In general, visitors are generally happy with recreation facilities on the Forest but some would like to see showers, dump stations, and hook-ups provided.

Future trends and direction

Results for the National Visitor Use Monitoring will be available by the end of 2004. This information will be used to identify areas where we can improve customer service and/or locations where existing facilities/ opportunities are not meeting current visitor expectations or demand.

II. Manage the Spruce Knob-Seneca Rocks National Recreation Area in accordance with the Act of September 28, 1965, for multiple resource uses with an emphasis on semi-primitive recreation uses.

Management action(s) taken to achieve this goal:

The Monongahela currently manages for a wide variety of recreation opportunities within the NRA ranging from highly developed recreation opportunities at the Seneca Rocks Discovery Center and Seneca Shadows campground to the Seneca Creek Backcountry which is managed to provide for semi-primitive non-motorized recreation opportunities. Numerous trails are also available which provide a wide range of hiking, equestrian, and mountain biking opportunities for day and overnight visitors.

The Forest joined the Chesapeake Bay Gateway Project for marketing and funding opportunities. This partnership will allow the Forest to work in partnership with a variety of organizations in planning and implementing a variety of interpretive and enhancement projects associated with the Potomac watershed and Chesapeake Bay.

2001 -2003 Overall Program Accomplishments:

Table 6 shows management activities within the NRA related to this goal.

Table 6 – Activities accomplished in the Spruce Knob-Seneca Rocks NRA

	2001	2002	2003
Standard Entrance Signs were provided by the West Virginia Department of Highways			X

Monitoring conducted in 2001, 2002, and 2003:

Numerous survey locations from the National Forest Recreation Use Survey were located within the NRA. The results will be available by the end of 2004.

Future trends and direction:

The National Recreation Visitor Use Monitoring was completed in 2003 results will be available by the end of 2004.

The Forest is tentatively working on a Participating Agreement with WVU to assist with the development of a NRA Plan. The estimated completion date is 2006. This plan will provide the overall guidelines for management of the NRA as well as zone portions of the area to continue to provide a wide variety of recreation opportunities ranging from highly developed to semi-primitive recreation opportunities.

III. Manage National Forest Wilderness in order to preserve the Wilderness attributes for which the areas were designated.

Management action(s) taken to achieve this goal:

There are ten primary output elements which we use to manage/ monitor wildernesses. Six of these ten must be met to manage a wilderness to standard. The following matrix briefly describes the elements and identifies which of our five wildernesses currently meet these standards.

Table 7 – Output elements for management of Monongahela NF Wilderness Areas

Element/ Wilderness	Cranberry	Dolly Sods	Laurel Fork North	Laurel Fork South	Otter Creek
Coverage by Fire Plan	**No**	**No**	**No**	**No**	**No**
Noxious Weed Treatments	**No**	**No**	**No**	**No**	**No**
Air Quality Monitoring	**No**	**Yes**	**No**	**No**	**Yes**
Education Plans Implemented	**No**	**No**	**No**	**No**	**No**
Adequate Forest plan Standards	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Completed Recreation Site Inventory	**No**	**No**	**No**	**No**	**No**
Adequate Outfitter and Guide Operating Plans	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Adequate Standards to Prevent Degradation	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Priority Information Needs are Addressed	**No**	**No**	**No**	**No**	**No**
Baseline Work Force in Place	**No**	**No**	**No**	**No**	**No**

2001 -2003 Overall Program Accomplishments:

Use is currently stable, based on visual observations. There are no official statistics on use of these areas. It is not believed that carrying capacity is currently a concern for the Cranberry, Laurel Fork North and South, and Otter Creek Wildernesses. Visual monitoring of the Dolly Sods Wilderness shall continue and carrying capacities may be established based on use levels. The MNF does not believe that establishing carrying capacities is currently a high priority and feels that our limited budget allocations can and should be spent on other higher priority recreation facilities, programs, and trails.

At this time, it is not felt that a permit system is necessary.

Monitoring for air quality and soils has been completed for the Dolly Sods and Otter Creek Wilderness areas. These are discussed in their respective sections later in this document.

Table 8 - Acres managed as wilderness

	2001	**2002**	**2003**
5 wildernesses	78,131	78,131	78,131

Based on recent budget allocations and the mix of higher recreation priorities and opportunities we have not addressed the concern related to changes observed within the Cranberry Wilderness Area.

Monitoring conducted in 2001, 2002, and 2003:

Wilderness Ranger Contacts and Trailhead Registration Forms and in 2002 and 2003 the National Visitor Use Monitoring was conducted on the Forest. This monitoring is being conducted to monitor visitor satisfaction, understanding of wilderness values, and wilderness resource protection

Future trends and direction:

Currently, we believe wilderness visitation is relatively stable, but overuse may be occurring in Dolly Sods based on visual observations by employees. Based on national surveys it appears that approximately 5% of all National Forest Visitors use wilderness. Results from the National Visitor Use Monitoring will be available at the end of 2004 and should more accurately reflect wilderness use and trends on the MNF.

IV. Manage habitat to help recovery of threatened and endangered species on the Forest. Protect sensitive species and unique species until their populations are viable. Improve the diversity of plants, animals, and stand conditions with an emphasis on the habitat needs for wild turkey, black bear, and associated species.

Management action(s) taken to achieve this goal:

Aquatics

There are no known populations of Federally Threatened or Endangered aquatic species within the proclamation boundary of the MNF. As such, population viability monitoring associated with National Forest management focuses primarily on the need to protect aquatic habitats and populations of species that are listed as sensitive species by the Regional Forester, identified as a management indicator species by the Forest Plan, or otherwise viewed as unique species due to viability concerns. Several efforts were pursued from fiscal years (FYs) 2001 through 2003 to address the need to sustain long-term population viability for target aquatic species and their associated communities. Some of these efforts included assessments that provide the foundation for making land management decisions that consider potential effects of activities on ecological processes that can influence population viability for aquatic species. Other efforts pursued from FY 2001 through 2003 include the implementation of projects designed to treat elements that can influence the condition and trend of the aquatic environment. Project implementation is often the culmination of monitoring efforts that range from specialist reviews of site-specific conditions to watershed-scale evaluations of ecosystems processes. Table 10 identifies efforts that were conducted during 2001, 2002, and 2003 that help address the need to provide for viable populations of aquatic species on National Forest System lands.

Plants

A community Conservation Assessment (CA) for the Mid-Appalachian Shale Barrens was completed and finalized in calendar year 2003. The CA covers endangered shale barren rockcress, and the following plants on the Regional Forester's Sensitive Species(RFSS) List: lillydale onion, Bradley's spleenwort, Appalachian blazing star, swordleaf phlox, heart leaved skullcap, and Kate's Mountain clover. The CA identified threats to shale barren communities where these plants are found.

Areas where active management is likely are surveyed for threatened, endangered, and sensitive species.

Table 9 – Botanical surveys 2001, 2002, and 2003

Survey year	Area	Total Acres	TES Species found	Comments
2003	Cherry River and Lower Clover	6,363	None, potential habitat (poor) for small whorled pogonia and butternut	Deer browse a concern for herbaceous layer
2003	Hedrick Road Trespass on US tract 307a	1	None	Garlic mustard found
2003	Cranberry Mountain Nature Center amphitheater	1	None	
2003	Fisherman Trail D2	5	None	
2003	Otter Creek Lysimeter	Unknown	none	
2003	Props Run Connector Trail	5	None	Common burdock found
2003	Lake Sherwood Sewer	6	None	Multiflora rose, honeysuckles,

Survey year	Area	Total Acres	TES Species found	Comments
	and Water lines			and Japanese barberry found
2002	Upper Williams project area	2,819	Appalachian violet, white monkshood, and rock skullcap	
2001	Desert Branch opportunity area	3,016	Long stalked holly (RFSS)	
2001	Glady watershed	8,049	None	

In 2002 trees shading a population of showy lady slippers, a RFSS, were felled to help increase light reaching the Forest floor.

Accomplishments in 2001, 2002, and 2003:

Aquatics

Table 10 - Activities pursued from fiscal years 2001 through 2003 to address the need to sustain long-term population viability for target aquatic species and their associated communities

	2001	2002	2003
Forest-wide Watershed Integrity Analysis – East-wide Watershed Assessment Protocol (EWAP)	1		
Mid-scale Resource Analyses – Ecosystem Analysis at the Watershed Scale (EAWS)	1	2	1
Project Level Aquatic Resources Coordination – completed Biological Evaluations (BE's)	Unkn	15	76
Fence Riparian within Range Allotments (acres)		43	
Debris Load Riparian within Range Allotments (acres)		3	
Hardened Stream Crossings within Range Allotments		2	2
Improved Watering Facilities within Range Allotments		2	1
Decommissioned/Stored Road Treatments (acres)	24	5	
Restrict Dispersed Motor Vehicle Access to Protect/Restore Riparian (acres)			35
Limestone Treatment to Acid Impaired Streams (miles)	10	10	10
Limestone Treatment to Acid Impaired Lakes (acres)	43	43	43
Stream Habitat Enhancement w/Large Woody Debris Additions (miles)	2		

Plants

Table 11 identifies specific activities related to this element for TE&S plants.

Table 11 – TE&S Plant Protection Actions

Action	2001	2002	2003
Community conservation assessment			1
Showy Lady Slipper release		Less than 1 acre	

Monitoring conducted in 2001, 2002, and 2003, and results:

Aquatics

The Forest utilized participating agreements to work collaboratively with partners to assess factors limiting brook trout production in forested, headwater streams. Assessments conducted in cooperation between the MNF, Westvaco, and WVU during 2001 explored the role of streamside and in-stream management as influential factors to brook trout productivity. In particular, the Forest wanted to see if large woody debris additions to streams, such as those conducted on National Forest System lands, effectively enhance conditions for brook trout populations. This effort estimated brook trout populations in study streams, monitored summer and fall brook trout movement using tagging techniques, evaluated summer habitat conditions including woody debris interactions, and sampled invertebrate drift and brook trout diets in control streams sections and stream sections treated with large woody debris.

One study from this effort was published as part of a doctoral dissertation entitled "*Aquatic-terrestrial linkages in Appalachian streams: Influence of riparian inputs on stream habitat, brook trout populations, and trophic dynamics"* by John A. Sweka from WVU in 2003. It found that adding woody debris by strategically felling selected trees had little effect on stream habitat three years following the treatment. The study also found that although populations of brook trout and aquatic macro-invertebrates fluctuated during the four years of this study, neither of these showed a consistent increase following the addition of woody debris. However, woody debris additions did increase the number of locations for leaf litter accumulations and brook trout diets shifted to a greater percentage of macro-invertebrates in the shredder functional feeding group by two years after the habitat treatment. Findings from this study support results from other studies regarding the important trophic linkages between terrestrial and aquatic systems in brook trout streams. Furthermore, this study suggests that it may require more than three years post treatment to detect some of the benefits to brook trout habitat and populations when woody debris is added to streams by merely felling select trees.

A second study associated with brook trout participating agreement was published as part of a Master's Thesis entitled "*Brook trout (Salvelinus fontinalis) movement and habitat use in a headwater stream of the central Appalachian mountains of West Virginia"* by Marisa Nel Logan from WVU in 2003. This study found that brook trout used pools as their primary habitat. In addition, brook trout were found to preferentially select areas that had woody debris as the formative pool feature and cover. This is consistent with findings from other studies of salmonid habitat utilization. Other aquatic habitat characteristics found to be preferentially selected by brook trout were water depth and velocity – both of which are artifacts of pool habitat and may be useful attributes for evaluating the quality of pool habitat for brook trout.

Another participating agreement between the MNF, Mead-Westvaco, WVU, USDA Forest Service Northeastern Research Station, and West Virginia Division of Natural Resources (WVDNR) was initiated in 2003 with the expectation that assessments under this agreement would need to continue for several years. This agreement was developed to facilitate a better understanding of the factors that influence the spatial and temporal variation of brook trout populations across the Forest to improve strategies for managing these populations. Factors being investigated include primary surgical geology for source water to streams, stream size, riparian conditions such as stand age (tree size) and canopy cover, in-stream habitat composition, substrate composition of spawning gravels, large woody debris density, angler pressure, and brook trout body condition prior to winter. Stream surveys were initiated during the 2003 field season and preliminary results are not expected prior to 2005.

Aquatic organism passage has been receiving renewed attention nationally as a critical issue for maintaining and restoring healthy aquatic ecosystems. Barriers to movement of fish and other aquatic organisms can isolate populations and habitat such that the productivity of aquatic ecosystems is reduced. The Clean Water Act requires road crossings of streams to allow fish passage. In 2002, a fish passage study was initiated on the MNF in the upper Greenbrier River watershed by the Eastern Aquatic Ecologist of the Forest Service and James Madison University. This study was initiated to begin assessing potential fish migration barriers associated

with road culverts on the Forest and use the information to develop objective criteria for determining passage barriers for various species (and age classes) of fish.

Stream crossing data was collected at 34 culverts according to the National Inventory and Assessment Procedure developed by the USFS San Dimas Technology and Development Center. Fish assemblages were sampled in similar habitats upstream and downstream of the 34 culverts for comparison purposes. Results from the initial phase of this study found statistically significant differences between fish populations upstream and downstream of culverts. Specifically, there were fewer fish species, lower relative abundances for all fish, and lower relative abundances for brook trout in stream segments upstream of culverts. This information indicates culverts are limiting upstream distributions of fish species in the upper Greenbrier River system and perhaps impairing the productivity these aquatic habitats. The second phase of this effort is attempting to develop criteria that will be expedite the process of identifying culverts as fish passage barriers for various fish species. As artificial fish passage barriers are identified, the Forest can begin taking the desired steps to correct them.

Water chemistry monitoring: Water chemistry is one of the fundamental building blocks for aquatic ecosystems. The significance of water chemistry is perhaps no more apparent than in aquatic systems composed of diverse geology particularly when these systems are subjected to effects from acid deposition. Watersheds across the MNF are composed of a wide range of surficial geologies that have variable capacities for neutralizing acidic conditions. In 2001, the MNF partnered with the Forest Service Eastern Aquatic Ecologist, James Madison University, and West Virginia Trout Unlimited initiated an effort to conduct Forest-wide monitoring of water chemistry properties in streams across the Forest.

The Forest developed a sample design that consisted of collecting water samples from 100 sites distributed across 88 streams and 24 different 5th level HUCs on National Forest System lands. The sample sites were strategically located so that monitoring results could be used to validate existing knowledge while also increasing the level of understanding of the relationships between water chemistry and various environmental factors including the geologic composition of contributing watershed areas, aquatic communities, and rates of acid deposition. Water samples were analyzed for measures of pH, acid neutralizing capacity (ANC), Na, K, Mg, Ca, Cl, NO3, SO4, Al, and Ca/H ratio because they are helpful in monitoring the sensitivity of aquatic ecosystem to acid deposition. For example, harmful effects to certain aquatic organisms begin to occur as pH values fall below 6.0; detrimental effects occur to most aquatic organisms as pH falls below 5.0. Also, ANC values less than 50 indicate a system is acid sensitive, values between 0 and 25 suggest systems likely experience episodic acidification during storms, and negative ANC values indicate systems are already acidic.

Water samples were collected during low flow conditions in the fall of 2001 and during elevated flow conditions in the spring of 2002. These sample periods and conditions were specifically targeted to help establish a current range of baseline water chemistry conditions across the various watersheds. Water samples collected at low flow conditions during the late summer to early fall period are typically expected to exhibit higher pH and ANC values due to the greater influence of groundwater on stream flows as compared to direct inputs from precipitation. Water samples collected at high flow conditions (particularly as a consequence of snow-melt) during the spring period are typically expected to exhibit worse water chemistry conditions. Given the tendency of water chemistry to depend upon flow conditions and the season of collection, establishing a range of water chemistry conditions at each location was preferred over single point sampling to allow for broader utility of the data in monitoring long-term trends.

Results of the sampling demonstrated a high degree of variability between the sample locations as expected. Measures of pH ranged from 3.88 to 8.2 (mean = 6.8) during fall 2001 samples (low flow conditions) and from 3.73 to 8.55 (mean = 6.4) during spring 2002 samples (high flow conditions). Measures of ANC ranged from -166 to 2868 (mean = 407) during fall 2001 samples and from -195 to 1599 (mean = 135 during spring 2002 samples. Water chemistry results were influenced by applications of limestone sands applied by the State of West Virginia at six sample sites.

The Forest combined data from the US Geological Survey regarding geologies that produce acid soils and information on rates of acid deposition from the Southern Appalachian Mountain Initiative to classify geologies as having a lower, moderate, or higher level of acid sensitivity. Results from the fall 2001 and spring 2002 water chemistry monitoring samples support the acid sensitive geology classification. They indicate poor water chemistry buffering in aquatic systems that have contributing watershed areas dominated by geologies classified as higher acid sensitivity and in some cases dominated by moderate and higher acid sensitive geologies (see Figure 1). Water chemistry appears to be the most limiting factor for productivity of streams in these poorly buffered areas. Continued monitoring is needed to assess long-term trends for water chemistry and improve our understanding of current influences (such as acid deposition and stream liming) on the range of water chemistry conditions inherent to the diverse aquatic ecosystems across the Forest.

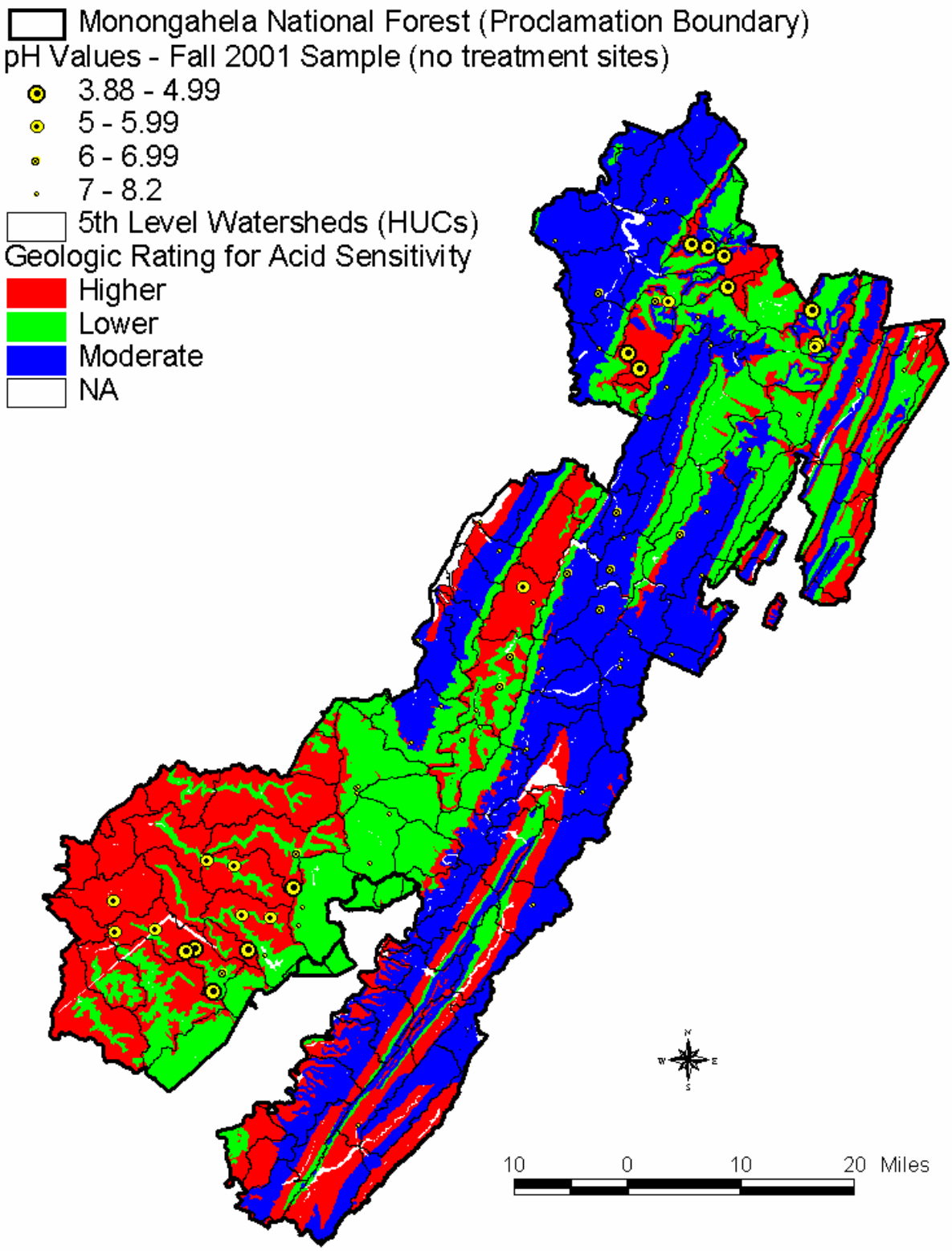

Figure 1. Results of pH testing from fall 2001 water chemistry samples in association with acid sensitivity classification of geologies occurring within the proclamation boundary of the MNF.

Aquatic Ecological Unit Inventory: Surveys were conducted during the summers of 2002 and 2003 to classify river valleys, stream reaches, and channel units according to the Forest's aquatic ecological classification system (see Table 12). This information contributed to assessments of aquatic resources for watershed planning efforts. In addition, this information will help further develop the aquatic ecological classification system and support future efforts to monitor the status of aquatic resources on the Forest.

Table 12. Aquatic ecological unit inventory surveys conducted between 2001 and 2003.

Aquatic Ecological Unit Inventory Task	2001	2002	2003
River Valley Surveys (miles)	0	24	12
Stream Reach Surveys (miles)	0	24	12
Channel Unit Surveys (miles)	0	0	12

Plants

A showy lady slipper population on the Forest was monitored by Dr. Katherine Gregg in 2000 and 2001. In 2001, the first stem with three flowers was documented. Since about 1993 this population has been relatively stable. Monitoring indicates periodic understory clearing would benefit the population, as well as continued maintenance of the fence to exclude deer.

In 2001, the shale barren rock cress population at Waid's Shale Barren was monitored by Jan Garrett and Robert Hunsucker, 12 individuals were seen. Multiflora rose, a non-native invasive plant, was found at the bottom of the barren and may become a threat to the shale barren rockcress. In 2002, the area was visited again by the summer botany crew. Five plants were found; all fruiting. Also that year, another population of shale barren rockcress was visited, with eight individuals found; three fruiting.

Botanical surveys before ground disturbing activities (Table 9) includes inventory through presence/absence surveys.

Sensitive plant species populations found in Upper Williams were protected by no harvest buffers or dropping units. Timber harvest has not occurred.

Future trends and direction:

The Showy Lady Slipper population may need further tree or shrub removal to increase light to the Forest floor.

The shale barrens will be surveyed for non-native invasive species (NNIS) in 2004, along with other botanical areas, recreation sites, and grazing allotments. Should multiflora rose be found to be encroaching on the sensitive species habitat, action will likely be taken to remove or reduce this threat.

Performance reports from the WVDNR Wildlife Resources Section of statewide monitoring of endangered plant species document the results of monitoring by the Forest Service and WVDNR. The performance reports are filed in the Forest Ecologists office and include Technical Bulletin 02-7 covering monitoring from March 2001 to February 2002, Technical Bulletin 01-6 covering March 2000 to February 2001, and Technical Bulletin 00-4 covering March 1999 to February 2000. Later reports are also filed in the Ecologists office.

Technical Bulletins 02-7 and 01-6 include running buffalo clover, shale barren rockcress, Virginia spiraea, Northeastern bulrush, Harperella, and Ammon's twist moss. Technical Bulletin 00-4 includes small whorled pogonia plus the species listed for the other reports. Harperella and Northeastern bulrush do not occur on the Monongahela.

Of the 20 running buffalo sites included in the reports, 14 sites are on the Monongahela NF or Fernow. Table 13 summarizes site information from the State's reports.

Table 13 – Running buffalo clover sites on MNF

Site	1999	2000	2001	Comments
Baker Sods	Decrease	Decrease	Not monitored	No apparent changes to habitat
Bowden	Not monitored	Slight decrease	Slight increase	Multi flora rose threat
Brushy Run	Not monitored	Steady	Not monitored	
Crouch Knob	Not monitored	Steady	Not surveyed	In 2001, assumed healthy population based on large numbers and no apparent threats
Fernow	Slight increase	Slight increase	Slight decrease	
Hoe Lick	Decline	Decline	Continued steady decline	No observed changes in habitat
Left Fork of Clover Run	Not monitored	Not monitored	Slight decrease	
Lower John's Run	Decline	No rooted crowns found	Decrease, no rooted crowns found	Area overgrown with vegetation, crowns may have been missed. In 1999, rooted crowns found in area not disturbed by roads.
Lower Rock Camp Run	Not monitored	Slight decline	Steady	
McGee Run-Back Fork Tributary	Stable	Slight decline	Not monitored	No apparent changes in habitat
McGowan Mountain	Steady	Steady	Steady	Plants stunted and not healthy
Shaver's Mountain	Increase	Slight decrease	Not monitored	
Upper John's Run/Rattlesnake Run	Slight decrease	Slight decrease	Not monitored	Large site covering 1km^2
Upper Rock camp Run	Increase	Slight decrease	Steady	This site in study area of effects of logging and canopy openings on running buffalo clover. 1994 harvest.

Shale barren rockcress sites monitored included the Waid's Draft shale barren on the Monongahela NF. Table 14 summarizes results of three years of monitoring. Some sites are monitored every five years. Both basal rosettes and flowers are counted when shale barren rockcress sites are monitored.

Table 14 – Shale barren rockcress sites on MNF

Site	1999	2000	2001
Blue Bend shale barren	Increase	Decline	Not monitored
Lower White's Draft shale barren	Decline	Decline	Not monitored
Meadow Creek shale barren	Decline	Slight increase	Not monitored
Upper White's Draft shale barren	Decline	Not monitored	Not monitored
Waid's Draft shale barren	Decline	Increase	Increase

Results of monitoring of Virginia spiraea are included in the 1999 and 2001 reports. One site is on the Monongahela NF. In 1999 and 2001, the coverage of Virginia spiraea had increased at the Camp Anthony site from previous years.

In 1999, the only known location of small whorled pogonia was monitored and no plants were found during several visits in the blooming period. The site is on the Monongahela and was found in 1996. Neither the 2000 nor 2001 report gives further information on monitoring of the site.

Ammon's moss or Ammon's twist moss sites were monitored all three years. The falls of Hills Creek site, on the MNF, was monitored each time. In 1999, five subpopulations (of seven original) were relocated and appeared healthy. All but one subpopulation appear safe from harm since they are difficult to access from the public boardwalk. In 2000, the same five subpopulations were found and monitored. It appeared that some collecting had taken place, but overall populations appeared healthy and nearly as extensive as the year before. In 2001, the same five subpopulations were monitored. More graffiti was noted at one site, however not directly on the plants. There were slight decreases in the size of some populations. Snails were observed eating some moss and areas of moss had been scrapped of in some areas indicating increased use of the area for recreation.

V. Maintain open areas of National Forest land for forage, wildlife, and visual purposes.

Management action(s) taken to achieve this goal:

Coordination with the WVDNR has been outstanding. The Forest has worked closely on both the Beulah and the Coles Run burn units. The Coles Run unit will be burned in FY 04 weather permitting.

Accomplishments in 2001, 2002, and 2003:

Table 15 – Acres maintained as open areas

	2001	**2002**	**2003**
Wildland Interface Sub-total	152	124	188
Non-Wildland Interface Sub-total	0	8	33
TOTAL	**152**	**132**	**221**
Wildlife opening Sub-total (included in total)	0	8	142
Research Projects (included in total)	68	35	42

Both the Beulah and Cheat Summit Fort burn sites have opening maintenance as one of the objectives.

Monitoring conducted in 2001, 2002, and 2003, and results:

September 30, 2003 – Reviewed the Beulah burn project to determine if we were reaching our objectives and if not what could we do to better meet the objectives. This was precipitated partly because of the impression that we have not burned these units hot enough in the past. A full report on this review is available upon request.

April 30, 2002 – Reviewed the Cheat Summit Fort burn site. - A full report on this review is available upon request.

April 19, 2002 – Reviewed the Elk Mountain burn. Poor results were achieved due to our attempt to burn a northern hardwood site. A full report on this review is available upon request.

Future trends and direction:

Based on our reviews we will continue to re-burn the open portions of the wildlife units. We intend to do a better job of capturing dryer burn windows, and to supplement burning with mechanical operations.