

CERTIFICATION STATEMENT
FROM
THE FOREST SUPERVISOR
DANIEL BOONE NATIONAL FOREST

The Monitoring & Evaluation Report for FY-97, is being prepared in FY-99. My direction to the monitoring team was to document the findings from activities that occurred during FY-97. Since September 31, 1997, many actions have either already occurred or the wheels set in motion, that respond to many of the recommendations in this report.

I have reviewed the information contained in this report. The Forest Land and Resource Management Plan (Plan) has been amended to change off-highway vehicle management direction. I have already initiated the Plan revision process which is the appropriate avenue for addressing many of the action items identified in this report. Prior to the Plan revision being completed, I initiated a Forest Plan amendment (SHNS) that would incorporate Special Habitat Needs and Silviculture methods into the current Plan.

Because the Plan contains deficiencies, and Prior to completing a revised Plan or completing the SHNS amendment, the Forest Plan is insufficient to carry out a timber sale program. However, the Plan even though it is not a state-of-the-art document, is sufficient for implementing other activities designed to protect and/or improve the human environment. These activities may involve the incidental cutting of trees in order to achieve their stated objectives.



BENJAMIN T. WORTHINGTON
Forest supervisor

DANIEL BOONE NATIONAL FOREST

MONITORING AND EVALUATION REPORT

for FISCAL YEAR 1997

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VICINITY MAP

FOREST PLANNING A STATUS UPDATE

Forest Plan Amendment - Off Highway Vehicle Management Direction

Late in Fiscal Year 1996 the Daniel Boone National Forest began preparations for development of a proposal to amend the Forest Plan management direction for the use of off-highway vehicles (OHV's) on the National Forest. The need for such an amendment had become more apparent as use continued to increase and evidence of increased impacts to soil and water resources was gathered.

In deciding how to best handle the need for changing the way OHV use is managed on the Daniel Boone, recreation specialists and planners considered the options of making the changes as part of the ongoing effort to revise the Forest Plan, or to begin preparation of a separate Forest Plan amendment. The decision to prepare an amendment was based on the fact that the impacts occurring to soil and water resources had the potential to harm many of the Forest's federally listed aquatic species. With this in mind, it was felt to be more prudent to make the necessary changes using the shorter amendment process, rather than do it through the more lengthy revision process.

The public scoping comment period began on December 16, 1996, and a Notice of Intent to Prepare an Environmental Impact Statement was published in the Federal Register on December 20, 1996. In considering public comment, the Forest utilized input received as part of the scoping effort for the revision of the Forest Plan, input solicited during the development of a proposal to amend the Forest Plan, and input received during the scoping comment period for the proposed amendment. In all, over 4,800 comments were considered.

Utilizing a process of content analysis on the comments, they were eventually consolidated into 12 issues, three of which were determined to be significant relative to the proposed action. The interdisciplinary team used these significant issues to guide the development of a range of alternatives for consideration.

A total of seven alternatives were developed, and four of those were considered in detail. By the close of Fiscal Year 1997 the analysis of environmental effects associated with each alternative was nearing completion and a Draft Environmental Impact Statement was being

readied for publication and distribution to the public in the next couple of months.

Forest Plan Revision - As Fiscal Year 1997 began, the scoping comment period for the Forest Plan revision was coming to an end. The Notice of Intent had been published in the Federal Register on June 21, 1996, and a 90-day comment period was established. Over 5,000 comments were received by the end of 1996 and a content analysis team was hard at work pouring over them. Much time and effort went into reading the documents, identifying and coding the individual comments contained within the documents, and inputting the results into a database for sorting and summarizing.

By the end of the fiscal year, these comments had been consolidated into 14 issues significant to the proposal to revise the Forest Plan. These issues included Fragmentation; Old Growth; Rare Communities; Endangered, Threatened, and Sensitive Species; Fish and Wildlife Management; Aquatic and Riparian Areas; Fire Management; Forest Health; Timber Products; Minerals; Recreation Opportunities; Scenery Resource Management; Roads and Trails; and Specially Designated Areas.

Work also continued during the year on various aspects of the Analysis of the Management Situation. In June 1997, the Region 8 Old-Growth Team completed and published *Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region*. Planning team members began using the information and guidelines contained in this document to revise the inventory of possible old growth stands on the Daniel Boone.

Much work also went into the mapping of revised Management Areas to be used during the formulation of alternatives. The Management Areas are based on a combination of ecological landtypes, watersheds, and social and administrative considerations. Detailed descriptions of each of the tentative Areas were developed.

A key tool to be used in the analysis conducted for the revision of the Forest Plan is the Forest's geographic information system, or GIS.

Development of this database involves converting many of the Daniel Boone National Forest's paper maps and data records into electronic map "coverages". Coverages being developed included timber stands, soils, geology, streams, water bodies, roads and trails, administrative

boundaries, threatened and endangered species occurrences, utility corridors, management areas, ecological units, cultural resource sites, and others. Development of this database has required the involvement of most of the Forest's resource specialists during the fiscal year.

FINDINGS AND RECOMMENDATIONS FOR FISCAL YEAR 1997

The Monitoring and Evaluation (M&E) Report is structured to correspond with Chapter VI of the Daniel Boone National Forest Land and Resource Management Plan (Forest Plan; Plan; FLMP).

The purpose of this process is to document the results of the Forest Plan monitoring and evaluation for fiscal year 1997. Monitoring and evaluation of programs is done to determine the progress toward achieving management goals, objectives and applying standards and guidelines (S&G) for the Forest Plan, and how well the Forest Plan is able to be implemented actions that address or respond to current controversy.

Monitoring and evaluation is an ongoing process. It is documented through annual reviews made by the Forest Supervisor, Forest Staff Officers, District Rangers, and other Forest personnel. Information from these reviews are compiled into a comprehensive report after the fiscal year is completed. Attention is given to the monitoring items in the Forest Plan that best address current controversy. Monitoring indicates whether the management direction contained in the Forest Plan is being effectively carried out and if any modification in direction is needed. It also indicates if the effects of implementing the Plan are occurring as predicted; whether the application of management area prescriptions are responding to public issues as well as management concerns; and if the cost of implementing the Plan is on target.

How are the Monitoring Items are organized?

Specific monitoring requirements are listed in Table VI-1, on pages VI-4 through VI-15 of the Plan. This report is formatted similar to this table. Information for each monitoring element includes:

Monitoring Item Description - The activity, practice, effect or resource being monitored, with a statement discussing the method used for monitoring and its objectives.

Variability which would initiate future action - The acceptable tolerance levels, beyond which some future action would be initiated.

Finding - Documentation of what was found.

Recommendation - Actions to take in response to the findings. Recommendations are made by Forest Staff Officers after they evaluate the findings. Possible recommendations include: 1) no action is needed; 2) continue Forest Plan

implementation and monitoring; 3) amend the Forest Plan to clarify, revise, or improve resource management; 4) further study to determine the best action to take; 5) elimination of current monitoring item; or 6) inclusion of new items.

A. SUMMARY OF NOTEWORTHY ISSUES

Over the years, points of contention on how the Daniel Boone National Forest should be managed have come and gone. Some of the more recent concerns are listed below. These points of contention have been identified to help focus monitoring and evaluation in areas appropriate to any controversy.

Threatened and Endangered Species

- Mist netting results have led to the necessary assumption that all forested areas of the Daniel Boone are suitable summer habitat for Indiana bats, a federally listed species.
- Red-cockaded woodpeckers are close to being extirpated from Kentucky. The few remaining birds in Kentucky are on National Forest System lands. Habitat management is critical in order to sustain the resident population and for stocking of new birds.
- Federally listed aquatic species are located primarily on the southern end of the Forest. Water quality is of primary concern for maintaining and improving habitat conditions.

Recreation

- Off-highway vehicle (OHV) use continues to be controversial.
- Rock climbing, especially in the Red River Gorge, is a popular activity and brings many people from surrounding states to the Gorge on weekends and for summer vacations.

Vegetation Management

- Prescribed burning is still not readily accepted as a management tool. Smoke management from controlled burns is a challenge because of the dissected ownership.
- The Leatherwood Fork proposed timber sale was challenged in court. The court decision could have an impact on present and future timber sales on the Forest.
- Herbicide use has always been controversial and has recently received attention because of a proposal to incorporate herbicides into a

maintenance program for electric transmission and distribution lines owned by EKPC.

Facilities

- Road access into the National Forest continues to be controversial. Some want good access while others don't want roads. Proposals to construct roads into Roadless Areas has drawn much controversy nationally.

B. RECREATION

- **DISPERSED AREA CONDITION** - Identify problems and changing situations and conditions. Provide assistance in management of dispersed activities.

Variability which would initiate future action:

When problem areas or situations are identified by an interdisciplinary team review or line officer.

Finding: 1) Concerns for the increased impacts to resources (i.e., damage to soil and water quality and potential impacts to plants and animals) from OHV use prompted the Forest Supervisor to take a closer look at the problem.

An interdisciplinary monitoring team was assembled to review monitoring information, verify that soil and water impacts were occurring and impacts to T&E species were likely.

2) The Clifty Wilderness was designated a Wilderness after the adoption of the Forest Plan. No standards and guidelines have been established for this wilderness area.

3) In the past there has been an increase in rock climbing in the Red River Gorge Geological Area. A Rock Climbing Management Guide for the Stanton Ranger District has been prepared to protect sensitive forest resources from unacceptable impacts. In addition, rock climbing is occurring in other areas on the forest.

4) There continues to be a concern that increasing high use in the Red River Gorge Geological Area (RRGGA) has impacted trails to a higher level than present maintenance levels can maintain. Higher levels of maintenance are needed and in some cases trail closure until the problem can be alleviated.

Recommendations:

- 1) Recommend that Forest Plan management direction for OHV's be changed.
- 2) Standards and guidelines for the Clifty Wilderness Area need to be developed.
- 3) Standards and guidelines for rock climbing need to be developed forest-wide.

4) Trails in the RRGGA will continue to be monitored and as new problem areas are recorded they will be addressed as resources become available.

C. WILDLIFE - PROPOSED, ENDANGERED, THREATENED, AND SENSITIVE (PETS) SPECIES -

- **INDIANA BAT (Endangered)**

Variability which would initiate future action:

1) Meaningful long-term population declines at significant hibernacula (as determined during the biennial winter census conducted according to Recovery Plan guidelines).

2) Damage to cave gates on the Forest that have been constructed to limit unauthorized human access to caves that serve as significant Indiana bat hibernacula.

3) Damage, collapse, or blockage of cave entrances or passages which alters air flow regimes and negatively affect winter cave microclimate at significant hibernacula.

4) Evidence of vandalism or human disturbance at any of the significant un-gated hibernacula, or vandalism to warning signs which have been posted to discourage unauthorized human entry during the hibernation season.

5) Declines in Indiana bat summer habitat suitability on the DBNF as defined by the Indiana Bat Summer Habitat Suitability Index Model (Romme et al, 1995). Foraging and roosting habitat (including large diameter snags located in open stands or timber) and adequate upland sources of drinking water should be provided forest-wide as described in the Indiana Bat Summer Habitat Management Strategy (MacGregor, 1995) with subsequent changes as described in the March 1996 letter from the Forest Service to the USFWS, Cookeville Field Office.

Finding: All of the significant (100 or more individuals) Indiana bat (IB) hibernacula on the Forest and on adjacent private holdings were monitored according to a recommended biennial census methodology presented in the IB Recovery

Plan (IBRP). Long term population declines have been noted at only two IB caves on the Forest (Ash and Bus Stop Caves); microclimate monitoring within both of these caves has shown that each provides marginal to unsuitable winter habitat for IB. The Forest Threatened and Endangered specialist feels that these caves have both served as refugia for IB that had been disturbed during the winter hibernation period at other nearby caves that harbor very large colonies, and that the gating of the better caves has eliminated the disturbance factor.

The overall IB winter population on the Forest has increased from about 9,000 to about 15,000, with the bulk of the increase taking place on the Stanton District. Data from all census was transmitted to the IB recovery team and to appropriate Kentucky state agency officials.

All cave gates were visually inspected in 1996 and 1997. One gate was vandalized and was repaired.

All significant IB hibernacula were monitored by visual inspection during population census visits, and cave microclimate data was also collected at this time. Extensive field notes were taken by the T&E specialist during all surveys, and temperature data profiles and sketches of critical bat roosting passages were prepared for all of these caves. Hobo DataLoggers were used to monitor winter temperature conditions at IB roosts in several caves on the Forest.

No obvious indications of human disturbance were noted at ungated IB caves on the Forest.

A reproductive female IB was captured during misnet surveys at a location on the Somerset District during 1996, and newly volant juveniles were caught there in 1996 and 1997. These provided additional documented IB reproduction on the Cumberland Plateau.

A telemetry study of the roosting habitat of IB prior to their entry into hibernation, was conducted on the Forest. Data is still being analyzed at this time. The Forest is continuing to work with EKV, UK, USFWS, and state agency personnel to set up a

summer bat banding program which would eventually allow the Forest to identify winter hibernacula used by summer-captured IB, VB, and RB. Implementation of this program would eventually provide some much-needed information concerning the summer ranges of the IB which hibernate on the Forest.

The Forest T&E specialist participated in the development of a revised version of the IB recovery plan.

Recommendation: none

• **ADDITIONAL PETS SPECIES (PLANTS)**

Variability which would initiate future action:

The FLMP was developed with a sensitive plant list. Changes to the Forest list would initiate future action. Also, information which showed increases or decreases in numbers or threats to the species would initiate future action.

Finding: The adoption of new criteria by the Regional Office for the establishment of Sensitive Species lists resulted in a change in numbers of plant species considered S on the forest. Surveys of white-fringeless orchid populations indicate considerable natural fluctuation, but also indicate that some sites continue to be adversely affected by high water flows. The origin of increased water flow is not fully understood, but in part appears tied to past (15-20 years ago) road construction and timber harvest. Population monitoring of white-haired goldenrod indicates that recreation does adversely affect this species, but many populations appear stable. Initial surveys for American Chaffseed in historical and potential habitat produced no records of the species, but suitable habitat does occur in several places on the Forest. Surveys conducted in powerline r-o-ows by an electric power cooperative for the B.E. process identified a new white fringeless orchid site and indicate that powerline r-o-ows are significant habitat for several S species as well as numerous Forest conservation species (most also State Heritage E or T).

Table C-1 - Summary of PETS Plant Species (1991, 1995, & 1997)

| Plant Type | Federally Endangered | | | Federally Threatened | | | Federally Proposed (T) | | | Federal Status Review | | | Forest Sensitive | | | TOTAL Plants | | |
|-------------|----------------------|----|----|----------------------|----|----|------------------------|----|----|-----------------------|----|----|------------------|----|----|--------------|----|----|
| | 91 | 95 | 97 | 91 | 95 | 97 | 91 | 95 | 97 | 91 | 95 | 97 | 91 | 95 | 97 | 91 | 95 | 97 |
| Bryophytes | n/a | - | - | n/a | - | - | n/a | - | - | n/a | 1 | - | n/a | - | 3 | n/a | 1 | 3 |
| Ferns | - | - | - | - | - | - | n/a | - | - | - | - | - | 2 | 1 | - | 2 | 1 | 0 |
| Gymnosperms | - | - | - | - | - | - | n/a | - | - | - | - | - | 1 | - | - | 1 | 0 | 0 |
| Monocots | - | - | - | - | - | - | n/a | - | - | 4 | 4 | - | 10 | 12 | 4 | 14 | 16 | 4 |

| | | | | | | | | | | | | | | | | | | |
|-------------------------|----------|----------|----------|----------|----------|----------|------------|----------|----------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Dicots ^{1 2} | 1 | 2 | 3 | 2 | 3 | 4 | n/a | 1 | - | 12 | 10 | - | 32 | 32 | 17 | 47 | 48 | 24 |
| TOTAL Plants | 1 | 2 | 3 | 2 | 3 | 4 | n/a | 1 | 0 | 16 | 15 | 0 | 45 | 45 | 24 | 64 | 66 | 31 |

¹ 1997 - Dicot Federally listed species include three species (1-E & 2-T) not confirmed on the forest, but for which potential recovery habitat exists. All three are known from Kentucky, two are not far from the Forest, and the third has apparent hybrid populations nearby. The species total is additive. Federal status review is only former C1 species and none are on or near the Forest.

² 1991 & 1995 - Dicot Federally listed species includes three species (1-E, 1-T, & 1-PT) not confirmed on the Forest, but for which potential recovery habitaat exists. All three species are known in Kentucky not far from the Forest. The species total is not additive. Most of the species included in the Federal status review group are also Forest Sensitive. Totals are seven Endangered, Threatened, or Proposed Threatened species and 45 sensitive species.

Recommendation: 1) Develop monitoring plans for Cumberland Sandwort (Fed. E), Virginia Spiraea (Fed. T), and American Chaffseed (Fed. E). Continue to search for Chaffseed, especially in and around areas treated with prescribed fire for RCW habitat management.

2) Establish several species as Management Indicator Species (MIS) to provide some measure of the condition of particular ecosystems. In particular, a suite of species associated with the Southern Yellow pine/Upland oak barrens/savannah community, should be used. Where possible, sensitive and conservation species should be addressed in Conservation Strategies/management plans tied to habitat.

3) Modify timber harvest and road design in the vicinity of white fringeless orchid populations to leave higher basal area along all stream channels above populations. Place all roads outside of stream drainage where populations or suitable habitat are located. Remove timber by endline or unbladed skid trails. Treat all streams near populations as perennial. Even though most do not flow above ground during summer, survey information in 1995 during drought conditions indicate that these streams are seep-fed and flow below the surface year-round.

4) Work with permittees on management of rights-of-way which provides for their needs and supports populations of rare and PETS plants. This includes uses of herbicides and mowing regimes. An ID Team was established to address the herbicide portion of this concern.

5) Work with recreation staff to develop signs encouraging Forest visitors to stay out of White-haired Goldenrod sites. Reroute trails where necessary and work with organized visitor groups to promote conservation education.

• **ADDITIONAL PETS SPECIES (ANIMALS)**

Variability which would initiate future action: The FLMP was developed with a sensitive animal list. Changes to the Forest list would initiate future action. Also, information which showed increases or decreases in numbers or threats to the species would initiate future action.

Finding: The Forest Plan provides for specific monitoring of a few PET animals, but not for Sensitive animal species. Adoption of new criteria by the Regional Office for establishment of Sensitive species lists resulted in a change in the number of animal species considered to be Sensitive on the Forest. The Forest Plan needs to be updated to include changes in knowledge of and status of zoological resources.

Table C-2 - Summary of PETS Animal Species (1991, 1995, & 1997)

| Animal Species | Federally Endangered | | | Federally Threatened | | | Federally Proposed (E or T) | | | Federal Status Review | | | Forest Sensitive | | | TOTAL Animals ³ | | |
|----------------------|----------------------|-----------|-----------|----------------------|----------|----------|-----------------------------|----------|----------|-----------------------|-----------|----------|------------------|-----------|----------------|----------------------------|-----------|-----------|
| | 91 | 95 | 97 | 91 | 95 | 97 | 91 | 95 | 97 | 91 | 95 | 97 | 91 | 95 | 97 | 91 | 95 | 97 |
| Mammals | 4 | 4 | 4 | - | - | - | n/a | - | - | 5 | 6 | - | - | 5 | 1 | 9 | 15 | 5 |
| Birds | 3 | 1 | 2 | - | 1 | 1 | n/a | - | - | - | 6 | - | 2 | 2 | 2 ⁴ | 5 | 10 | 5 |
| Reptiles | - | - | - | - | - | - | n/a | - | - | 1 | 1 | - | - | 1 | - | 1 | 2 | 0 |
| Amphibians | - | - | - | - | - | - | n/a | - | - | 1 | 1 | - | - | 1 | - | 1 | 2 | 0 |
| Fish | - | 2 | 2 | 1 | 1 | 1 | n/a | - | - | 5 | 9 | - | 4 | 9 | 12 | 10 | 21 | 15 |
| Crayfish | - | - | - | - | - | - | n/a | - | - | 1 | - | - | 1 | 2 | 2 | 2 | 2 | 2 |
| Insects | - | - | - | - | - | - | n/a | - | - | 1 | 6 | - | - | 1 | 3 | 1 | 7 | 3 |
| Mussels | 3 | 17 | 20 | - | - | - | n/a | 3 | - | 8 | 6 | - | 1 | 5 | 7 | 12 | 31 | 27 |
| Snails | n/a | - | - | n/a | - | - | n/a | - | - | n/a | 2 | - | n/a | - | 3 | n/a | 2 | 3 |
| Total Animals | 10 | 24 | 28 | 1 | 2 | 2 | n/a | 3 | 0 | 22 | 37 | 0 | 8 | 26 | 30 | 41 | 92 | 60 |

Recommendation: Develop recovery strategies for each Federally-listed species and consult with the US Fish and Wildlife Service to agree on

management that will not only protect, but recover populations. Develop conservation strategies for sensitive species, using the same process, that

³ 1991 & 1995 - Total animals is not additive. Most species included in the Federal status review groups are also Forest Sensitive. Totals are actually, 29 are Endangered, Threatened, or Proposed Endangered Species, and 26 are Sensitive species.

⁴ 1997 - Total animals is additive. One Sensitive bird species, Loggerhead Shrike, is known to pass through and around the Forest, but is not known to nest on the Forest. Some habitat is present for the species, but limited in extent.

will preclude Federal listing by increasing
populations to secure levels.

D. TIMBER

- **ALLOWABLE SALE QUANTITY** - To track the chargeable yields during the planning period. This quantity is established as a quantity that could be sustained indefinitely, if not exceeded. Monitoring is provided for in the ten-year timber sale program, timber management information system (TMIS).

Variability which would initiate future action:

Greater than 15% change from 5-year base harvest schedule. More than 10% of sales located outside of scheduled 10-year plan.

Finding: All sales offered were within the scheduled 10-year plan. Volume offered over the last 5 years averaged 17.5 mmbf, which is greater than a 15% change from the 5-year base harvest schedule.

In Fiscal Year 1997, the Stanton District Ranger's decision to harvest timber as described in the Leatherwood Fork Environmental Assessment was challenged in the District Court. A 60-day notice of intent to file suit under the Endangered Species Act was received in August 1996. The US District Court issued an OPINION AND ORDER in May 1997 which found that top priority was not afforded the Indiana bat as required by ESA and that the Leatherwood Fork decision, without consulting formally with the USFWS and in the absence of a biological opinion was arbitrary and capricious. Furthermore, the Court concluded that the three policies (Indiana Bat strategy, Cliffline policy, and two-aged shelterwood policy) may not be employed until properly amended to the Forest Plan. The Court further found that an EIS should have been prepared because a "hard look" at scientific evidence was necessary before this project could continue.

Following the Court Order and Opinion, the Forest Service informed the court of their intent to amend into the Forest Plan the three policies at issue; to withdraw all future and proposed timber sales that use one or all of the policies until they are amended into the Forest Plan; and to interrupt felling activities on thirty-seven active timber sales. The court responded that the courts Order and Opinion applied only to the Leatherwood Fork project and that the thirty-seven active timber sales were not before him. The thirty-seven active timber sales were allowed to resume operations.

Another 60-day notice of intent was received in November 1996 with a complaint filed in September 1997. The challenges were: 1) failure to consult with USFWS on the Forest Plan violates

ESA and APA; 2) the Forest Plan's exclusive use of even-aged management violates NFMA; 3) failure to consider alternatives to even-aged management violates NEPA; and 4) failure to adopt policies as official Forest Plan amendments violates NFMA.

Table D - Timber Offered (mbf)

| | Volume Offered (mmbf) | Volume Offered (mmbf) |
|--|-----------------------|-----------------------|
| FLMP Projected for Annual Offer | 45 | 8.2 |
| Average Offered Last 5 Yrs (1993 - 1997) | 17.5 | 3.2 |
| Average Offered (1986 - 1997) | 31 | 5.6 |
| Offered in Fiscal Year 1996 | 19.1 | 3.5 |
| Offered in Fiscal Year 1997 | 7.8 | 1.4 |

Recommendation: Amend the Forest Plan to include the cliffline Management policy, two-aged shelterwood policy, and Indiana bat management strategy. Enter into consultation with the USFWS. Districts to begin landscape scale analysis to identify future projects.

- **TIMBER PLANNING ASSUMPTIONS** - Acres of Regeneration Cutting by Management Area - To track the amount of regeneration and intermediate cutting by management area, chargeable/non-chargeable yields.

Variability which would initiate future action:

More than 10% change.

Finding: All regeneration harvesting occurred within Management Areas 6 and 7. The Forest Plan identifies these two management areas as being suitable for timber production. No regeneration harvesting occurred within Management Area 5.

Recommendation: None.

E. SOIL, WATER AND AIR

- **SOIL DISTURBING ACTIVITIES** - Determine if prescribed standards and guidelines, and mitigation measures are protecting soil productivity. Validate projected erosion rates and "T" factors for various management activities. Visual estimates and transects which monitor amounts and conditions of ground cover, nutrient status, soil bulk density. Use of special techniques will measure soil loss specifically related to individual management areas, soil mapping units, etc.

Variability which would initiate future action:

Any deviation from Forest-wide standards and guidelines, and when actual erosion rates exceed projected erosion rates and "T" factors.

Finding: Based on functional assistance trips conducted on the Forest, documentation of implementation and effectiveness monitoring using the Soil and Water Best Management Practices (BMP's) field evaluation form adopted by the Forest, and within the timber sale program, compliance monitoring with FLRMP Standards and Guidelines accomplished through the timber sale contract administration process, we conclude that the Forest was successful in achieving Forest Plan Goals and Objectives for soil and water resources.

No erosion rates have been measured to support validation of "T" factors for various management activities. Tolerable accelerated soil loss ratings assigned to soils on the Forest using criteria in the National Cooperative Soil Survey Handbook (NRCS directives system) and Forest Service R8 Guidelines, continue to serve as management objectives and comparison of soil behavior or response to use and management.

Recommendation: Collaborate with Forest Service Research on validation standards for allowable change or tolerable soil loss to maintain long term soil productivity.

- **EFFECTS OF ACTIVITIES ON WATER (SURFACE AND GROUND) QUALITY AND RIPARIAN AREAS** - Determine if management practices on analysis areas and drainage basins are affecting water quality. Verify predicted water yield and sediment rates in relation to beneficial use of water. Monitor projects using above, below or paired watershed sampling techniques. Select areas having a high potential for adverse impacts such as soils developing from Pennington shale.

Variability which would initiate future action: Activities not meeting State and Federal water quality standards or leading to possible long-term degradation of the watershed.

Finding: Monitoring activities on the Forest involved a broad-based water sampling program that addressed compliance with state and federal regulations, long-term trend analysis, baseline data collection, and the cause-and-effect relationship between land management and water quality. More than 20 locations were sampled on a regular basis in 11 watersheds during 1997. Overall results showed that a vast majority of streams on National Forest land are of the highest quality and land management activities are not significantly degrading water quality.

Even though most of the streams on the Daniel Boone National Forest are of highest quality, there are still over 40 miles that are impacted by acid mine drainage from past coal mining activities and brine from old oil wells. Most of these streams, that are impacted from land use prior to Forest Service ownership, do not meet state water quality standards and can not support aquatic life. These streams are monitored on a regular basis and restoration projects continue as funding and technology permits. In 1997 restoration projects were complete in Wildcat Branch on the Somerset Ranger District and in Jones Branch on the Stearns Ranger District. Both of these projects are being monitored to evaluate their effectiveness. These two projects are also part of larger watershed re-habilitation efforts that will take quite a few years to complete.

With the dramatic increase in Off-Highway Vehicles (OHV) in recent years, questions have been raised about their impacts to the stream ecosystem. In 1997, a monitoring project was completed in cooperation with the University of Kentucky on the impacts from OHV's on several representative streams on the Stanton Ranger District. The study showed that OHV trails that are not properly designed and maintained have resulted in increased stream channel erosion and instability and may be adversely affected aquatic biota. Field observations during 1997 confirmed that this is happening on other parts of the DBNF.

The DBNF has also been actively involved in the development of Forest and State-wide Watershed Management Frameworks. These frameworks will help guide monitoring, watershed assessment, and restoration into the next century.

For the most part, research studies conducted by other federal and state agencies are being relied on for information on water yield and timing of flows (e.g. USGS, KY Geological Survey, and KY Division of Water). These studies and a few that have been conducted by the Forest indicate that the small changes in flow from our management activities are not significantly affecting downstream beneficial uses.

Recommendation: None

- **TRENDS FOR WATER QUANTITY, QUALITY AND TIMING** - Determine effect of plan on long-term trend for water quality, quantity and timing. Determined by specific sampling design, available data, and data to be collected. Monitor representative drainage basins with a mix of practices.

Variability which would initiate future action:

Any downward trend or lack of progress in achieving stated goals and objectives.

Finding: Water quality standards in general are being met. However, the exception to this are severely disturbed mining areas and acid mine drainage problems on acquired land. Funding for trend analysis is limited.

Recommendation: None

- **AIR QUALITY - SMOKE MANAGEMENT**

Variability which would initiate future action:

Non-compliance with the Clean Air Act and State air standards. More specifically, particulate matter monitoring data for any area within or adjacent to the Forest is close to exceeding Clean Air Act or State ambient air quality standards.

Finding: Analysis of the ambient air data for the state of Kentucky shows that there are no areas on or near National Forest lands that currently in exceed the particulate standards, nor are any areas even close to the standard. This indicates that the level of prescribed fire that has occurred in the past has not caused particulates to exceed the standards in those areas the state is monitoring.

The primary smoke-related concern of prescribed fire continues to be safety. If dense smoke covers roads and other travel-ways, accidents are more likely to occur. To address the safety issues, smoke management guidelines are followed on all burns. These include planning to burn when weather conditions are conducive to rapid dispersal of smoke with winds that carry emissions away from smoke sensitive areas such as residential areas, hospitals, schools, nursing homes, and preparing a contingency plan to deal with the problem that might arise should weather change and the smoke become a problem.

Models are available to predict particulate concentrations downwind of proposed burns. This information would be useful in prescribed fire planning. If particulate concentrations become a concern for the state in the vicinity of the Forest, then monitoring could be initiated to ensure that the Forest is in compliance with state standards. Another way to ensure compliance may be to use modeling, but only in coordination with the State. The addition of a dispersion index to the prescribed fire weather forecast by the National Weather Service forecast is planned.

Recommendation: None

F. PROTECTION

- **FUEL TREATMENT** - Evaluate the extent and effects of prescribed fire. Review prescribed fire plans before and after burning and on-site inspections of prescribed fires during the burn and post-burn to evaluate burning conditions, smoke behavior, smoke dispersal, and burn objectives.

Variability which would initiate future action: Objectives of prescribed fire are not being met.

Finding: Fuel reduction burns on the Forest totaled 10,731 acres in FY-97 (134% of target). The Forest utilizes a program of aerial ignition, the Forest overhead team, and pooling Forest personnel to burn large areas.

Burn execution and short term fire effects are reviewed and documented by the Burn Boss on the Burn Plan. these objectives are being met. Achievement of long term goals and objectives will be measured using guidelines established in the Forest Prescribed Fire Monitoring Plan.

Recommendation: None

G. FACILITIES

- **ROAD MAINTENANCE** - Ensure that road maintenance estimates were correct, and protection of resources is adequate. Ensure that the amount of reconstruction is correct and accomplished as scheduled; that design standards are appropriate for management needs; and that estimated costs are correct. Review the Management Attainment Report, annual budgets, contracts and timber sale appraisals, and conduct field reviews for compliance.

Variability which would initiate future action: Average costs deviate from estimates by more than 25%. Road condition surveys show increase in maintenance needs (\$) of more than 20% from previous year. Deviation of +/- 25% from planned mileage.

Finding: Road maintenance is generally being performed to an acceptable level to protect resources. Surface blading and roadside mowing needs are generally being met. Surface replacement, brushing, and project maintenance are not fully met, but are within a 20% deviation. There are some indications that maintenance level 1 and 2 roads need additional maintenance to protect soil and water resources.

Recommendation: Continue to review level 1 and 2 maintenance needs on a case-by-case basis.

- **ROAD CONSTRUCTION / RECONSTRUCTION** - Ensure that the amount of reconstruction is correct and accomplished as scheduled, and that road design standards are appropriate for management needs. Review the Management Attainment Report for compliance.

Variability which would initiate future action:
 Deviation of +/- 25% from assigned targets.

Finding:

Table-G - Road construction and reconstruction accomplishments

| | Accomplished (miles) | | FLMP per year | Attainment | | Total for FLMP |
|-------------|----------------------|-------|---------------|------------|-------|----------------|
| | FY-96 | FY-97 | (miles) | FY-96 | FY-97 | period |
| Construct | 13.7 | 1.4 | 67.9 | 20% | 2% | 22% |
| Reconstruct | 23.4 | 8.1 | 55.1 | 42% | 15% | 38% |

The level of road construction/reconstruction below the Plan level is due partially to a timber harvest below the Plan level. However, the Plan assumptions on road density appear to be high. All roads prescribed as for individual sales were constructed.

Recommendation: Revise Forest Plan to reflect more accurate road needs.

**Table - FLMP Accomplishments 1994 through 1998
 Daniel Boone National Forest**

(All dollar amounts are adjusted to 1988 dollars)

| MAR No. | Management Description | Unit of Measure | ANTICIPATED FLMP 10-year average | | ACCOMPLISHED Annual Average 1986 thru 1997 | | FY-1997 | |
|-------------------|------------------------------|-----------------|-------------------------------------|-------------------------|--|-------------------------|------------------|-------------------------|
| | | | Target | Allocation ⁵ | Accomp | Allocation ¹ | Accomp | Allocation ¹ |
| RECREATION | | | | | | | | |
| 26.0 | Developed sites-ops & maint. | PAOT day | 4,486,000 | \$2,054,640 | 4,910,879 | \$1,152,000 | 2,845,876 | \$1,068,000 |
| 2602 | Developed sites | PAOT day | | | | | 2,659,398 | n/a |
| 21.0 | Trail constr. ⁶ | mile | 12.5 | \$58,391 | 13.7 | \$81,000 | 27 | \$110,000 |
| 21.1 | Trail maint. | mile | 322 | \$71,000 | 197 | \$81,000 | 100 | \$62,000 |
| HERITAGE | | | | | | | | |
| 27.1 | Surveys | acre | 67,000 | \$124,500 | 9,469 | \$84,000 | 3,646 | \$34,000 |
| 65.2 | Site evaluation | each | 5 | n/a | 3.3 | | 7 | n/a |
| 65.3 | Site interpreted | each | | | | | 10 | n/a |
| 65.4 | Site protected | each | | | | | 3 | n/a |
| VEGETATION | | | | | | | | |
| 77.0 | Timber offered | mmcf | 8.2 | \$728,851 | 5.5 | \$940,000 | 1.4 | \$684,000 |
| 17.0 | | mmbf | 45 | n/a | 30.3 | | 7.8 | n/a |
| 18.0 | Silviculture Px. | acre | 66,413 | \$200,060 | 64,916 ⁷ | \$184,000 | n/a ⁴ | \$77,000 |
| 19.1 | Reforestation | acre | 7,035 | \$1,645,432 | 5,398 | \$807,000 | 1,769 | \$258,000 |
| 20.1 | Timber stand imp | acre | 4,035 | \$461,433 | 2,554 | \$310,000 | 156 | \$18,000 |
| 18F4 | Regen. MA 5: | | | | | | | |
| | Morehead | acre | 57 | | 16 | | 0 | |
| | London | acre | 64 | | 28 | | 0 | |
| | Somerset | acre | 24 | | 13 | | 0 | |
| | TOTAL | acre | 145 | | 57 | | 0 | |
| | | | | n/a | | | | n/a |
| WILDLIFE | | | | | | | | |
| 66.2 | Habitat imprv. | acre | 450 | \$165,790 | 1,036 | \$178,000 | 1,285 | \$159,000 |
| 37.2 | Habitat | each | 120 | \$68,875 | 314 | \$65,000 | 408 | \$84,000 |

⁵Allocations are adjusted to equal 1988 dollars.

⁶Trail construction miles does not include construction of trail bridges.

⁷Tracking discontinued after FY-95. Average target for 10 years, 1986-1995.

| MAR No. | Management Description | Unit of Measure | ANTICIPATED FLMP 10-year average | | ACCOMPLISHED Annual Average 1986 thru 1997 | | FY-1997 | |
|-------------------------------|------------------------|-----------------|-------------------------------------|-------------|--|------------|------------------|------------|
| | | | Target | Allocation | Accomp | Allocation | Accomp | Allocation |
| | structures | | | | | | | |
| 68.4 | Fish hab. imprv. | acre | 30 | \$7,450 | 57 | \$21,000 | 44 | \$5,000 |
| 68.3 | Fish structures | each | 10 | \$5,000 | 84 | \$14,000 | 28 | \$13,000 |
| 72.6 | T&E hab. imprv. | acre | 600 | \$13,420 | 2,626 | \$39,000 | 16,079 | \$30,000 |
| 39.2 | T&E structures | each | 2 | \$4,140 | 62 | \$87,000 | 182 | \$25,000 |
| RANGE | | | | | | | | |
| 28.0 | Grazing permitted | aum | 100 | \$10,353 | 120 | \$9,000 | 0 | \$1,000 |
| 29.0 | Range non-struct. | each | 50 | \$5,177 | 23 | \$2,000 | 0 | \$2,000 |
| 30.0 | Range structures | acre | 2 | \$4,141 | 2 | \$2,000 | 1 | \$0 |
| SOIL, WATER & AIR | | | | | | | | |
| 13.0 | Improvements | acre | 144 | \$157,200 | 167 | \$158,000 | 249 | \$249,000 |
| 13.6 | Improv. maint. | acre | 495 | \$152,752 | 1,650 ⁸ | \$51,000 | n/a ⁵ | \$0 |
| MINERALS & GEOLOGY | | | | | | | | |
| 87.3 | Energy Operation | each | 720 | \$262,800 | 373 | \$207,000 | 551 | \$178,000 |
| LANDS | | | | | | | | |
| 32.0 | Land exchange | acre | 2,056 | \$121,751 | 1,745 | \$46,000 | 0 | \$45,000 |
| 31.0 | Land purchase | acre | 300 | \$72,471 | 495 | \$64,000 | 768 | \$77,000 |
| 33.0 | Landline establish | mile | 115 | \$354,280 | 100 | \$158,000 | 23 | \$49,000 |
| 90.1 | Landline maint. | mile | 280 | \$126,824 | 259 | \$69,000 | 161 | \$61,000 |
| 34.0 | Right-of-way | cases | 33 | \$119,782 | 28 | \$39,000 | 1 | \$31,000 |
| PROTECTION | | | | | | | | |
| 16.2 | Fuel reduction | acre | 5,830 | \$150,947 | 2,854 | \$61,000 | 11,931 | \$76,000 |
| FACILITIES | | | | | | | | |
| 91.2 | Maintained | mile | 1,144 | \$607,415 | 1,064 | \$462,000 | 1,311 | \$447,000 |
| 93.x | Constr./reconstr | mile | 92 | \$1,516,320 | 32 | \$750,000 | 9.5 | \$236,000 |

⁸Tracking discontinued after FY-95. Average target and dollars for 10 years, 1986-1995.
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SUMMARY OF ACTION ITEMS

(from above Recommendations)

B. RECREATION

• DISPERSED AREA CONDITION

Recommendation:

- 1) Recommend that Forest Plan management direction for OHV's be changed.
- 2) Standards and guidelines for the Clifty Wilderness Area need to be developed.
- 3) Standards and guidelines for rock climbing need to be developed Forest-wide.
- 4) Trails in the RRGGA will continue to be monitored and as new problem areas are recorded they will be addressed as resources become available.

Responsibility: 1) Forest Planning Team
2) District Ranger
3) District Ranger/Forest

Supervisor 4) District Ranger

Completion Date: 1) Forest Plan Revision
2) Forest Plan Revision
3) Forest Plan Revision
4) Ongoing

C. WILDLIFE - PROPOSED, ENDANGERED, THREATENED, AND SENSITIVE (PETS) SPECIES

• ADDITIONAL PETS SPECIES (PLANTS)

Recommendation: 1) Develop monitoring plans for Cumberland Sandwort (Fed. E), Virginia Spiraea (Fed. T), and American Chaffseed (Fed. E). Continue to search for Chaffseed, especially in and around areas treated with prescribed fire for RCW habitat management.

2) Establish several species as Management Indicator Species (MIS) to provide some measure of the condition of particular ecosystems. In particular, a suite of species associated with the Southern Yellow pine/Upland oak barrens/savannah community, should be used. Where possible, sensitive and conservation species should be addressed in Conservation Strategies/management plans tied to habitat.

3) Modify timber harvest and road design in the vicinity of white fringeless orchid populations to leave higher basal area along all stream channels above populations. Place all roads outside of stream drainage where populations or suitable habitat are located. Remove timber by endline or unbladed skid trails. Treat all streams near

populations as perennial. Even though most do not flow above ground during summer, survey information in 1995 during drought conditions indicate that these streams are seep-fed and flow below the surface year-round.

4) Work with permittees on management of rights-of-way which provides for their needs and supports populations of rare and PETS plants. This includes uses of herbicides and mowing regimes. An ID Team was established to address the herbicide portion of this concern.

5) Work with recreation staff to develop signs encouraging Forest visitors to stay out of White-haired Goldenrod sites. Reroute trails where necessary and work with organized visitor groups to promote conservation education.

Responsibility:

- 1) Forest Botanist / Biologist
- 2) Forest Botanist / Biologis
- 3) Forest Botanist / Biologis
- 4) Forest Botanist and Lands Staff
- 5) Forest Botanist and Recreation Staff

Completion Date: Forest Plan Revision

• ADDITIONAL PETS SPECIES (ANIMALS)

Recommendation: Develop recovery strategies for each Federally-listed species and consult with the US Fish and Wildlife Service to agree on management that will not only protect, but recover populations. Develop conservation strategies for sensitive species, using the same process, that will preclude Federal listing by increasing populations to secure levels.

Responsibility: T&E Biologist

Completion Date: Forest Plan Revision

D. TIMBER

• ALLOWABLE SALE QUANTITY - .

Recommendation: Amend the Forest Plan to include the cliffline Management policy, two-aged shelterwood policy, and Indiana bat management strategy. Enter into consultation with the USFWS. Districts to begin landscape scale analysis to identify future projects.

Responsibility: Forest Management Team

Completion Date: Spring 1999

E. SOIL, WATER AND AIR

- **SOIL DISTURBING ACTIVITIES**

Recommendation: Collaborate with Forest Service Research on validation standards for allowable change or tolerable soil loss to maintain long term soil productivity.

Responsibility: Forest Soil Scientist

Completion Date: Forest Plan Revision

G. FACILITIES

- **ROAD MAINTENANCE**

Recommendation: Continue to review level 1 and 2 maintenance needs on a case-by-case basis.

Responsibility: Engineering/Recreation Staff Officer

Completion Date: October 1999

- **ROAD CONSTRUCTION / RECONSTRUCTION**

Recommendation: Revise Forest Plan to reflect more accurate road needs

Responsibility: Engineering/Recreation Staff Officer

Completion Date: Concurrent with Forest Plan revision

LIST OF PREPARERS

Mason Miller - Landscape Architect / Acting Engineering Recreation Staff Officer

James Boyd - Transportation Planner

Vicki Bishop - Fisheries biologist

John MacGregor - Threatened and Endangered Species Biologist

David Taylor - Botanist

George Chalfant - Soil Scientist

Jon Walker - Hydrologist

Kathleen Kennedy - Fire Dispatch

Kevin Lawrence - Forest Planner

Paul Finke - Implementation Coordinator / Silviculturist